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Original Articles.

DRUGS IRRITANT TO THE KIDNEYS, AND HENCE TO BE AVOIDED IN IMPAIRED KIDNEY FUNCTION.*

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The title of this paper really covers two distinct subjects: the study of renal irritants, and the question whether the use of these should necessarily be condemned in the presence of nephritis. I shall reverse this order, and discuss in the first place the question:

Is the use of drugs which irritate the kidneys to be prohibited when the renal functions are impaired?

THE GENERAL PROBLEM.

This common opinion, that renal irritants should be avoided in renal diseases, seems to be based rather on *a priori* conceptions, than on direct experiments or observations. Basing ourselves on analogy, on the common experience of inflammatory processes in other regions which have been better studied, we are doubtless justified in accepting this as a general rule. If it causes us to err at all, the error is apt to be on the safer side. But, after all, may there not be important exceptions to this general rule? Have we not many instances in which an irritant agent acts favorably on an inflammatory process in other situations? Are we correct in assuming that this may not occur in the case of nephritis? Were this the case, and should it be proved that every renal irritant causes a further injury to the inflamed kidney tissue, it would not, even then, necessarily follow that every renal irritant should be proscribed. The injury to the kidney is not the direct source of danger in nephritis, but the immediate danger lies rather in the secondary results of this injury, viz., the retention of deleterious substances in the body. It is quite conceivable that a drug might be immensely useful by leading to the excretion of these substances, even if it did so at the expense of some further slight injury to the kidney. It need scarcely be said that its field of usefulness would be very limited; but were we to exclude irritants altogether from the treatment of inflamed conditions, we should have to dispense with all forms of stimulation. Is not rest the first desideratum in the treatment of inflammation, and is not every extra work thrown on the inflamed organ injurious to it, and therefore every stimulant contraindicated? Nevertheless, we often risk this lesser direct evil for the greater indirect benefit which experience has taught us to expect. And so, in the case of the kidney, if we condemn on *a priori* grounds and without qualification every form of irritation, we must also condemn by the same reasoning every form of diuresis. On the other hand, we must not fall into the error of supposing that only those drugs are to be avoided in nephritis which irritate the kidneys, or which stimulate them to overwork. Dangers quite as grave may arise from the retention of deleterious substances introduced under the disguise of medicines. The danger of a constant administration of potassium salts, digitalis, etc., under conditions when they can not be excreted, lies even more in their general toxicity than in any direct effect on the kidneys. A recent work on the effect of salts in nephritis[1] also suggests that drugs which are indifferent to healthy kidneys may become irritant in nephritis. Finally we are confronted with the question: Are we justified in assuming without direct proof that the drugs which are capable of producing nephritis, are really renal irritants in the therapeutic doses? It is quite reasonable to suppose that doses which are indifferent to healthy kidneys may become irritant in nephritis; but there must evidently be a limit to this, and the question as to whether our therapeutic doses lie above or below this limit can only be answered by experiment.

SPECIFIC PROBLEMS FOR ANIMAL EXPERIMENTS.

It is evident, from these considerations, that the problem can only be solved when we are in possession of considerable experimental material—most of which is, unfortunately, still wanting. We should know in the first place whether a drug is capable of producing nephritis at all, and to what anatomic lesions it gives rise. This portion of the problem has been studied quite well. The next experimental question concerns the effect of these nephritic poisons on the composition of the urine, and here our knowledge is already very deficient. All the nephritic poisons give rise to urine which contains proteids, casts, renal epithelium and often leucocytes; in some cases blood or hemoglobin and its derivatives are excreted. The quantity of urine is increased by small doses and diminished by larger quantities—and there our information generally stops.

The effect of different doses on the constituents of the urine—which is most important from a therapeutic standpoint—has scarcely been studied except in the case of a few diuretics. It has been shown that glomerular nephritis (as produced by cantharis) greatly lessens the renal excretion of water, and diminishes or abolishes the diuretic effect of fluids, saline diuretics, caffein and phlorrhizin,[2] and that the molecular concentration of the blood serum therefore tends to increase,[3] whereas

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Pharmacology, and approved for publication by the Executive Committee: Drs. G. F. Butler, Solomon Solis-Cohen and O. T. Osborne.

1. J. Castaigne and F. Rathery: La Semaine Méd., 1903, p. 309.
2. Hellin and Spiro: Arch. f. Exp. Path. u. Pharm., 1897, vol. xxxviii, p. 368.
3. Richter and Roth: Berl. klin. Woch., 1899, vol. xxxvi, pp. 657, 683.

those nephritic poisons which act only on the tubular epithelium (chromate) have less effect. It has been shown by several investigators that all nephritic poisons and diuretics (except water) tend to break down the chlorid regulating mechanisms in the rabbit, but not in the dog. This is about the extent of our experimental knowledge of the subject. Evidently, there is a large field for pharmacologic investigation, which would necessarily have to be done on animals. Researches along this line could scarcely fail to yield important additions to our knowledge of the drugs, of nephritis and of the physiology of the kidney. These results, obtained with toxic doses on healthy kidneys, could not, however, be applied directly to the question of the effects of therapeutic doses on diseased kidneys.

CLINICAL INVESTIGATIONS.

For this purpose we must know the effect of therapeutic doses on metabolism, and on the excretion of the urinary constituents, both in healthy kidneys and in the various forms and stages of nephritis. We must also know, by direct experiment and not merely by *a priori* reasoning, the modifications which these therapeutic doses introduce into the nephritic process itself. As a preliminary to this, we also must have an accurate knowledge of the chemical data of the various forms of nephritis. We already know that there are considerable differences in the reaction of the various classes of animals to drugs—witness the different effect of caffein on rabbits and dogs, the different behavior of the chlorid regulating mechanism in these animals toward nephritic agents. These facts indicate that experiments on the lower animals could not be applied directly to man, although they would be valuable for orientation, and as pharmacologic data. But direct experiments on healthy human subjects and on nephritic patients are the surest way to a successful solution of these problems. I would not be understood as advocating indiscriminate experimentation on patients. I am only pleading for the thorough scientific study of those instances in which drugs, such as calomel, digitalis, potassium and anesthetics would be conservatively administered in any case.

METHODS OF INVESTIGATION.

The methods of study are sufficiently indicated by the preceding considerations. They would comprise a thorough and accurate investigation of the constituents of the urine before, during and after the administration of the drug. This would bear in most cases particularly on the total quantity of urine, its molecular concentration, and the percentage and daily quantity of the nitrogen, chlorids, and proteid. The more factors are determined in a given case, the greater its value; but too great multiplicity of observations tends to inaccuracy; or at the best, restricts the number of cases which can be observed. For this reason further refinements, such as the separate determination of albumin and globulin, of the various nitrogenous metabolites and of the salts; also the effect on the excretion of salts and other drugs introduced into the body, would form proper subjects for later investigation.

The subject of the greatest immediate importance is, beyond doubt, the effect on the proteid of the urine; for this is the only quantitative index which we have of the course of the nephritis. The percentage of the proteid is especially important. Emerson[4] has again shown the reliability of this factor. It need scarcely be mentioned that the general conditions, such as diet and salt income, must be kept perfectly uniform. It may not be superfluous to dwell on the fact that these observations, to be of any value, must be made with chemic methods of sufficient accuracy. The so-called rapid clinical methods of quantitative estimation are generally worse than useless for scientific purposes. Results which are not reliable are necessarily misleading. I am well aware that investigations of this character consume time. Considering the many possible types of nephritis, it would probably be necessary to dispose of a considerable number of such studies before generalization would be safe. But from the great importance of the subject I feel convinced that the results would in the end justify all the cost.

SYNOPSIS OF LITERATURE.

It is therefore a source of astonishment to find how little work has been done in this direction. There is an excellent paper by Emerson[4] which may well be taken as a general model for this work. This research, small as it is to the entire subject, already indicates that diuresis produced by the administration of water or diuretin does not increase the percentage of proteid in acute or chronic nephritis, and may even diminish it; it also demonstrates the value of a milk diet and rest in bed; and establishes some other valuable data, surely not an unpromising showing for a single and comparatively simple research.

Emerson's results agree very well with those obtained by me[5] in a case of "physiologic" albuminuria. The subject had a persistent albuminuria, amounting to 0.32-1.19 gm. per liter, or 0.2-0.9 a day; without any other symptom of nephritis or abnormality whatsoever.* Various drugs were tried, in therapeutic doses; none of these produced changes exceeding the normal variations; the only positive result was obtained with a very large dose (31 gm.) of potassium acetate, which produced a free diuresis and lessened the per cent. of proteid, without altering its daily quantity. Smaller doses (4 and 11.7 gm.), as also therapeutic doses of potassium nitrate, 4 gm.; caffein, 0.6 gm.; urea, 2.1 gm.; digitalis, 1 c.c. of tincture; nitroglycerin, 3.3 and 3.9 mg.; strychnin, 6.5 mg. and water had no certain effect on the albumin.

There are also a considerable number of observations on the effect of water and salts on the composition of the urine in health, and a few studies of their effects in nephritis. I shall only consider the latter. Kövesi and Róth-Schulz[6] state that the administration of water, which ordinarily increases the quantity of urine and lessens its molecular concentration (depression or freezing point), does not have this effect in acute and subacute nephritis; the divergence from the normal result is less in cases of contracted kidneys. They propose this as a diagnostic test for kidney insufficiency. Koeppe[7] arrives at the same result. It is also well known that a diseased kidney can not secrete urines with a molecular concentration much higher than that of the blood,[8] especially when the tubular epithelium is involved. Some important contributions to this subject of the effects of salts and water on nephritis have appeared quite recently, stimulated by the observations of French clinicians on the effect of salt on nephritic edemas. Mohr and Dapper[9] obtain the important result that a moderate

4. C. P. Emerson: Johns Hopkins Hosp. Reports, 1902, vol. x, p. 323.

5. T. Sollmann and E. C. McComb: Jour. Exp. Med., 1898, vol. iii, p. 137.

* Dr. McComb informs me that the albuminuria has now disappeared completely.

6. Kövesi and Roth Schulz: Berl. klin. Woch., 1900, (quoted from Koeppe).

7. H. Koeppe: Deutsche med. Woch., 1903, vol. xxix, p. 817.

8. T. Sollmann: Amer. Med., 1902, vol. iv, pp. 656-661.

9. L. Mohr and Dapper: Zeits. klin. Med., vol. l, p. 371.

limitation of water (to 1½ liters per day) leads to a diminution of nephritic edema, without diminishing the excretion of metabolites (nitrogen and phosphates); but an excessive reduction, whilst it may lessen the edema, also impairs the excretion.

With chronic contracted kidney, the reduction of water causes generally a temporary increase of the albuminuria, but this soon returns to the previous degree. Mohr[10] and von Koziczkowsky[11] find that some cases of nephritis show a retention of chlorid, while others do not have this tendency.

I would also cite the studies of Castaigne and Rathery,[1] who cite numerous cases in which albuminuria was caused, in some, by administering sodium chlorid, in others by withholding this salt. They also found that doses of salt which did not cause albuminuria in normal rabbits, increased an already existing renal albuminuria.

While this list of investigations dealing with quantitative determinations of the effect of nephritic and diuretic drugs is perhaps not quite exhaustive, yet it is fairly so; and this illustrates the paucity of our positive knowledge of the subject, which I have emphasized earlier in this paper.

THE PHARMACOLOGY OF NEPHRITIC POISONS.

In the absence of these experimental data, it is not possible for me to treat of the subject as I would wish to do, i. e., from the standpoint of the effect of nephritic drugs in nephritis. I must content myself in presenting to you what is known concerning the effects of toxic doses. This study has more interest for the pharmacologist than for the practicing physician, but it is not devoid of importance to the latter, since it will serve to point out to him which drugs should be held in suspicion and which therefore require investigation.

A very large number of the most commonly used drugs must be placed in this class. Everyone is familiar with the fact that most substances act as irritants if they are brought in contact with tissues, in sufficient concentration. It is also well known that the conditions for irritation are peculiarly favorable in the kidney; partly because the concentration is increased during the excretion of the substance, and also because the renal cells are peculiarly delicate and subject to injury. To emphasize the latter fact, we need but recall the comparatively small variations from the normal which give rise to albuminuria; and that clamping the renal artery for a very short time causes a very persistent impairment of the renal functions.

A drug, to be classed as a nephritic poison, must possess the following qualities: 1. It must be capable of causing irritation. 2. It must be capable of being absorbed. 3. It must be capable of injuring the kidney in doses which are smaller than those which will produce acute death through its other actions. 4. In some cases the nephritis is not so much due to the direct effect of the drug on the kidney as to the breaking down of the blood-corpuscles, and other tissue changes.

The more important nephritic poisons may be grouped as follows, according to the tissues which they may affect: 1. Tubular epithelium primarily; stroma secondarily; metals, aloin, coal tar products, alcohol and anesthetics, oxalates. 2. Glomeruli primarily; tubules only with larger doses; cantharidin, arsenic. 3. General irritants; essential oils. 4. Only irritant under special conditions: Caffein, neutral salts of alkalies. 5. Affecting kidney secondarily: Poisons destroying blood; chronic poisons (alcoholism, morphinism).

For convenience of study I have divided the nephritic drugs into several large classes, according to their chemical affinities.

GROUPS OF METALS.

All metals, so far as they have been studied[12] cause a nephritis when they are absorbed into the body in sufficient amount. This has been actually observed with the following: Aluminum, antimony, arsenic, beryllium, bismuth, cadmium, cerium, chromium, cobalt, copper, lead, manganese, mercury, nickel, phosphorus, platinum, silver, tungstan, uranium and zinc.

Owing to the emetic effects and the small absorbability of most metals, the nephritis results only when corrosive doses are taken, or if the salts are injected directly into the veins or subcutaneously. Mercury, arsenic and chromates are notable exceptions. Nephritis may also arise in the course of chronic poisoning by any metal.

The anatomic and functional effects are alike for all metals, with the few exceptions which will be noted presently. The finer details have only been studied on the more important metals; but there is every reason to suppose that the others conform to the same type.

Anatomic Changes.—The anatomic changes are at first confined to the epithelium of the convoluted tubules, which show cloudy swelling, disintegration of the nuclei and impaired staining qualities, and often fatty degeneration. If the dose is very large, and in chronic poisoning, the inflammation extends to the connective tissue, which shows round-cell infiltration, cirrhosis and other changes.

Urine.—The urine is moderately increased by very small doses; larger doses diminish its quantity to total suppression. It becomes albuminous and often bloody, and contains leucocytes, renal cells and numerous casts.

The clinical phenomena of this nephritis need not be discussed.

SPECIAL METALS.

Arsenic.—This produces a specific paralysis of capillaries, which is most pronounced in the glomeruli. Hellin and Spiro,[2] experimenting on rabbits, found the space of Bowman's capsule all but obliterated by the swollen capillaries. In addition to this, arsenic has the usual metal effect, the epithelium of the convoluted tubules being affected in various degrees, while the straight tubules escape almost unchanged. Albuminuria appeared within ten minutes after the hypodermic injection of 10 mg. per kilogram.

Phosphorus.—This causes the same fatty degeneration in the kidney which it produces in other organs.

Bismuth.—This is said by Langhans[13] to act differently from other metals, and more like cantharidin; small doses causing a strong glomerular nephritis, with comparatively little change in the tubular epithelium. The stroma, however, is affected quite early.

Chromates and Bichromates.—These have been used extensively in experimental work, to produce an almost purely tubular nephritis.[2] The epithelium of the convoluted tubules may undergo total necrosis. The glomerular epithelium and the straight tubules are unaffected, or at most suffer very late. The urine becomes albuminous, scanty and contains numerous casts and

10. L. Mohr: Ibid., 1904, vol. II, p. 331.
11. E. v. Koziczkowsky: Ibid., 1904, vol. II, p. 287.

12. See especially R. Kobert, Lehrbuch der Intoxicationen; the following text books have also been freely used in the compilation of this pharmacologic study: H. Klonka, Grundriss Toxicologie; O. Schmeideberg, Pharmakologie; A. R. Cushny, Pharmacology; H. C. Wood, Therapeutics, and Sollmann, Pharmacology.
13. Langhans: Quoted by Mürset.

sometimes blood. Very small doses cause a slight diuresis in rabbits.[14] Chronic poisoning ends with extensive interstitial nephritis. (Rabbit, 30 mg. per kilogram, subcutaneous.)

Iron.—Tyson warns against the use of excessive doses of iron in chronic nephritis, but not apparently because of any action which it might have on the kidney. I could find no reports of nephritic phenomena referable to iron.

Mercury.—Kobert[15] claims that large doses cause occlusion of the renal tubules by calcareous deposits. Otherwise the phenomena of large doses of mercury are those typical of all metals. Its principal interest lies in the effects of small doses, which have such a wide application in therapeutics.

CALOMEL DIURESIS.

A most important action in the present connection is the calomel diuresis. The diuretic effect of calomel in cardiac dropsy is said to have been well known to the physicians in the latter half of the eighteenth century, but it was forgotten, and practically rediscovered by Jendrássik in 1886.[16] He found it effective mainly in cardiac dropsies, in which it produced results far greater than could be obtained with digitalis or caffein. The urine was often increased to 7 or 8 liters a day. The absolute amount of urea and chlorids was also greatly increased. To obtain the best effects, 0.2 gm. was given from 4 to 5 times a day, until a slight mercurial stomatitis was produced. If this did not prove effective from the start, the remedy was discontinued; it also seems wise to intermit it occasionally. The bowels may be regulated by opium. Jendrássik remarks that the calomel appears relatively or quite ineffective when the heart disease is uncomplicated by dropsies; it was also ineffective in pleuritic exudates, in nephritic effusions, and in healthy individuals. This report gave rise to extensive trials of the drug. The results of these were summarized by Jendrássik in 1891,[17] together with further observations and experiments of his own. His previous conclusions concerning the best method of administration, and the usefulness of calomel in cardiac dropsies seem to have been generally confirmed, as also the relative insufficiency in non-dropsical heart disease, in pleuritic exudates and in normal individuals. It seemed to be slightly diuretic in the latter, but the action can never compare with that seen in cardiac dropsies. It was often found effective in hepatic ascites, but failed frequently. It gave good results in some cases of nephritic edema, but in most instances gave no result; it seemed impossible to predict what it would do. Wood[18] states that "in chronic parenchymatous nephritis with alarming decrease of urine, calomel is one of the most efficient diuretics known."

The theoretical objections to the use of so powerful a renal irritant as mercury in nephritis, was early emphasized, especially by Cohn,[19] and supported by some clinical observations. It was claimed that there is a very marked tendency to mercurial symptoms, and that the nephritis is often made worse. The greater number of observers, however, hold the opposite view, viz., that calomel does not render the nephritis worse, whether it has a diuretic action or not. This is defended by Jendrássik, and by Heuck.[20] Schild[21] reports 3 cases, in which he claims that a diuretic effect was obtained, together with a lessened per cent. of albumin; the daily output of proteid being unchanged.

Briefly, it seems certain that the doses of calomel which are advocated have never produced albuminuria in normal individuals, but the question of their effect on an existing nephritis is not sufficiently investigated to admit of a decisive answer. Great conservatism in its employment is therefore indicated.

MECHANISM OF THE CALOMEL DIURESIS.

Jendrássik showed that the effect is due to the mercury of the calomel, for other insoluble mercurials have a similar effect, although they are not so useful by reason of their side actions. He also tried to determine the mechanism of this mercury action by experimental means. He passes rather lightly over the opinion held by most of his contemporaries, that the calomel acts by irritating the renal epithelium. Perhaps his strongest argument is based on a few hemoglobin estimations; he argues, quite correctly, that a diuresis produced by renal irritation should concentrate the blood; direct observation showed that it was more dilute. This result, if correct, would indicate that the diuresis is merely the secondary result of an absorption of the exudate. In view of the importance of the subject, it is to be regretted that these hemoglobin estimations have not been repeated. The fact that calomel is only effective in edema, naturally favors the idea that it acts on the exudate, but the absence of effect with the exudates of pleurisy and hepatic cirrhosis speak even more strongly against it. Jendrássik himself points out that the effect is not obtained through change in the general circulation, so that this explanation for its selective effect in cardiac dropsy falls away.

The subject was in this unsatisfactory condition when Cohnstein[22] undertook its investigation. He experimented on rabbits, by the hypodermic injection of solutions of calomel in hyposulphites of sodium, and of silver and platinum. A very moderate diuresis occurred with small doses, but this failed to set in if the animals were deeply chloralized. (It will be recalled that caffein gives a good diuresis under these conditions.) This result brought him to the conclusion that the calomel diuresis is caused by a vasomotor action, originating in the medulla.

The question seems to have been abandoned until Vejux-Tyrode and Nelson[23] in 1903 repeated Cohnstein's work, with very different results. They attribute the difference to the hyposulphite used by Cohnstein. The experimental data in the paper are so scanty that it is not possible to form an independent opinion as to whether this is the most likely explanation or whether the dosage and other conditions could not have influenced the result. They employed the caseinate of mercury; intravenous injections sometimes gave a slight and very short diuresis, but more often none. Subcutaneous administration was more often successful: deep anesthesia did not alter the result, as claimed by Cohnstein. When an artificial ascites was produced by the injection of saline solution into the peritoneal cavity the calomel often caused a greater diuresis.

They arrive at the conclusion that the mechanism of

14. Ruschhaupt: Pflüger's Archiv, 1902, vol. xci, p. 595.
15. Kobert cites a compilation of the literature by Weichselbaum, Centrlbl. f. Pathol., 1891, No. 1.
16. Jendrássik: Deut. Arch. klin. Med., 1886, vol. xxxviii, p. 499.
17. Jendrássik: Ibid., 1891, vol. xlvii, p. 226.
18. H. C. Wood: Therapeutics, 11th ed., 1902, p. 670.
19. M. Cohn: Dissertation, Berlin, 1887.
20. Heuck: Dissertation, Heidelberg, 1889.
21. W. Schild: Dissertation, Halle, 1892.
22. Cohnstein: Arch. f. Exp. Path. u. Pharm., vol. xxx, p. 126, 1892.
23. M. Vejux-Tyrode and Nelson: Jour. Med. Res., 1903, vol. x, p. 132.

the calomel diuresis is too complicated to be explained by the known data—a conclusion in which we must concur, unsatisfactory as it is.

SERIES OF BENZOL DERIVATIVES.

We are probably safe in assuming that all coal tar products are capable of producing nephritis. This has been demonstrated in the case of phenol, cresol, creosote, salicylates, salol, resorcin, pyrogallol, anilin and the dyes (methylene blue), picric acid, antipyrin and saccharin; and doubtless of many others. With the greater number, albuminuria occurs only with very large doses, quite beyond the therapeutic limits. Smaller doses cause a diuresis without albumin. It may be doubted whether the coal tar products, in therapeutic doses, need be counted among the possible nephritic poisons; but some suspicion is justified. Acutely toxic amounts produce a diminished and albuminous urine, with casts, and often with blood or hemoglobin and methemoglobin. The anatomic findings consist in a profound degeneration of the tubular epithelium. This is well illustrated by Hesselbach.[24] The changes become interstitial in chronic poisoning.

VOLATILE OILS.

There can be no doubt that all essential oils and the substances containing them, may irritate the kidneys, in part directly in the course of their excretion and, in part also, by producing a hyperemia of the pelvic viscera. All these substances are diuretic in therapeutic doses, and the diuresis is attributed to their irritant action. Even these doses must therefore be regarded with suspicion, especially in acute nephritis. Larger doses result in diminished and albuminous urine. This has been observed in the case of turpentine, juniper, cubebs and thymol. Savin, and probably the other ecbolic oils, produce in addition a hemorrhagic condition.

DIGITALIS GROUP.

All the members of this group (the digitalis principles, strophanthus and squills) in therapeutic doses, cause a diuresis, especially in cardiac disease. LeNoir and Camus[25] have shown that the main effect is on the water and chlorids, that the action appears on the day following the administration and persists for some time. Overdoses, on the other hand, diminish the urine and render it albuminous and often bloody.

In view of the known irritant action of these drugs, their effect on the urine has also been referred to a varying degree of irritation of the renal cells. This has never been proved, and it seems more likely that the effects are mainly secondary to the circulatory changes; the diuresis to an improvement of the renal circulation and to the hydremia following the absorption of edemas; the anuria from overdoses being referred to tetanic contracture of the renal arterioles. It remains to investigate whether the ordinary doses are at all irritant in nephritis.

CANTHARIDIN.

This poison is one of the most powerful and one of the most selective of the renal irritants, a fact which makes it especially interesting to the pharmacologist, and especially useful for experimental purposes.

Richter and Roth[3] have shown that even a moderate degree of cantharidin nephritis prevents the compensating action of the remaining kidney when the other has been excised and that it lessens the excretion of organic metabolites, and therefore raises the molecular concentration of the blood. Hellin and Spiro[2] also show that it prevents caffein and phlorrhizin diuresis completely. Cantharis should always be avoided in renal disease, at least until further investigations have been made. Its therapeutic indications are, however, so limited that the occasion for its use in nephritis rarely arises. The anatomic lesions produced by cantharidin have been quite thoroughly investigated. The earlier literature (from 1880 to 1882) is quoted by Mürset.[26] This has been confirmed in every point by Hellin and Spiro and Richter and Róth: Small doses act entirely on the glomeruli, which are enormously dilated; numerous leucocytes are found in Bowman's capsule. The urine becomes albuminous within half an hour after subcutaneous injection. The smallest doses increase its amount, while larger doses diminish it. The epithelium of the convoluted tubules is only affected by larger doses, and rather late in the course of the poisoning. The interstitial tissue escapes entirely in the acute intoxication, and is but slightly changed even in the subacute form.

ALOIN.

This has also a purely experimental importance. Cushny states, without citation of his source, that it does not irritate the kidneys in man, nor in the dog or cat. The anatomic lesions in rabbits have been investigated especially by Mürset;[26] they are practically the same in acute and chronic poisoning, and consist mainly in degeneration of the epithelium of the convoluted tubules. This loses its striations and staining qualities, and the nuclei disappear. The glomerular epithelium is but slightly altered, and the glomerular vessels show no lesions. These observations are confirmed by Hellin and Spiro.[2] The urine may be increased or diminished and contains proteids, leucocytes, casts, crystals and blood.

PHLORRHIZIN.

The importance of this glucosid is also mainly experimental, but it has some practical significance from its use as a diagnostic test of kidney insufficiency. Its administration leads to glycosuria and diuresis. There can be no doubt that the glycosuria is of renal origin; there are as yet, however, no facts to show what influence its renal action has on the course of nephritis.

Of the anthelmintics, both santonin and male fern are capable of producing parenchymatous nephritis; santonin also causes hematuria.

CATHARTIC PRINCIPLES.

The irritant cathartics may be supposed to act on the kidneys directly by their irritant action, and indirectly by the pelvic hyperemia. The cathartic resins have sometimes given rise to nephritic phenomena. I have found no reports of nephritis from rhubarb, senna, cascara, and other emodin containing drugs. From their relation to aloin, they are open to suspicion. I have also failed to find reports of renal irritation from croton oil.

ALCOHOL.

The irritant effects of large doses of alcohol on the kidney are too well known to require discussion. They rarely lead to an acute albuminuria in healthy subjects, but even moderate doses may occasionally be unfavorable in an existing nephritis. The fatty degeneration and cirrhosis which chronic alcoholism produces in the kidneys need not be considered in this place.

24. Hesselbach in Kobert's Lehrbuch, p. 230.
25. Le Noir and Camus: Jour. de Physiol., 1903, vol. v, p. 117.
26. Mürset: Arch. f. Exp. Path. und Pharm., 1885, vol. xix, p. 310.

CHLOROFORM AND ETHER.

These drugs have a peculiar importance, since their administration as anesthetics is often urgently indicated during the course of nephritis. There can be no doubt that overdoses produce acute parenchymatous nephritis and that even the amounts which are required in the course of a short operation may be very distinctly unfavorable to nephritic patients. There are innumerable observations bearing on this point, but very few possess the required degree of scientific accuracy. The urine is rarely examined for a sufficient period before and after the operation, and even the proteid estimation is usually not quantitative, or is made by inaccurate clinical methods. We are therefore unable to estimate the dangers of an ordinary anesthesia. (The recent studies of Munro[27] seem to indicate that they have been exaggerated). Nor is it possible to give a decisive opinion as to the relative danger of chloroform and ether. This would seem to be an urgent problem for clinical experimental investigation.

Chronic chloroform poisoning leads to the same changes as chronic alcoholism. The other inhalation anesthetics, as also the hydrocarbon hypnotics (chloral, urethane, hedonal, etc.), may be supposed to produce analogous effects, although there has not been opportunity for actual observations with all of these drugs. Sulfonal is especially apt to cause nephritis, with extensive necrosis of the tubular epithelium.

IODOFORM AND UROTROPIN.

Iodoform is also capable of producing albuminuria and hematuria. Even its local use on large open surfaces has been known to produce these phenomena of renal irritation.

Urotropin is another substance which has caused nephritis through changes in the tubular epithelium. The urine is apt to contain blood cells as well as the serum proteids. Formaldehyd would probably produce similar effects.

ALKALOIDS.

The majority of alkaloids are so slightly irritant and are used in doses so small that there can be little question of nephritic action. The albuminurias which are seen late in the course of the various drug habits are doubtless secondary phenomena, and not due to direct irritation. The only alkaloids which could be suspected of acting directly on the kidney are those which are markedly irritant, like veratrin, or which are given in very large doses, as quinin. There seem to be no reliable observations on the renal effects of veratrin. The data as to quinin are also scanty. According to Kobert, instances of hemoglobinuria and persistent albuminuria have been observed after large doses of this drug. The caffein group (including caffein, theobromin and theophyllin) occupies a peculiar position among the diuretics, in that these drugs appear to stimulate the renal epithelium without any of the usual phenomena of irritation. Although the investigations into the mechanism of their action are not closed, the known facts are all in favor of the view that the diuresis results from a direct stimulation of the cells, mainly or solely those of the convoluted tubules and that any action which they may have on the general and renal circulation is inconstant, and therefore of secondary importance. The evidence is equally clear that they do not irritate the kidneys. Pouchet and Chevalier[28] have indeed made the statement that theocin (theophyllin) in large doses injures the epithelium of the convoluted tubules and glomeruli. This, however, relates merely to theocin, and needs confirmation. The only other fact in favor of an injurious action is that caffein, like all other diuretics, breaks down the chlorid-regulating mechanism in rabbits. Even this phenomenon is absent in dogs and in man.[29]

The changes which caffein produce in the urine have been extensively studied. It increases not only the excretion of water, but also that of all the solids, and particularly of urea; the percentage of the latter remaining practically unchanged, notwithstanding the diuresis.[30] Caffein or theobromin would, therefore, seem especially to be indicated to secure the excretion of metabolites when this is deficient in nephritis. The only danger would lie in the increased work which they must necessarily put on the kidneys. The observations of Emerson[4] and of Sollmann and McComb[5] show that the percentage of albumin is not increased, and that, therefore, no injury was caused in these cases. On the other hand, the usefulness of these drugs is lessened by the fact that they can not act if the tubular epithelium is greatly changed[2] and their action does not seem to be sustained well on continuous administration.[25]

OTHER PURIN BODIES.

Clinical observations seem to indicate that other purin bodies—such as are formed in the course of metabolism, or which exist in the extractives of meat—do not share the harmlessness of caffein. The experimental data are still too scanty to make their discussion profitable.

NEUTRAL SALTS OF ALKALIES.

The chlorid and acetate of sodium or potassium, as also glucose and urea, secure a diuresis, in which the absolute amount of metabolites and salts is increased, while their concentrations in the urine is diminished—excepting the salt which has been administered. Similar results are secured by drinking water copiously. The mechanism of this action is not yet completely elucidated, but I incline to the opinion that the diuresis is mainly the result of physical causes, such as the increased quantity and the dilution of the blood, changes in its molecular concentration, and the different resorbability of the various ions. It would take us too far to enter deeply into this subject; but I believe that we may assume that the vital stimulation plays but a subordinate rôle in the process, and that irritation does not occur at all under ordinary conditions. Much interest has been aroused recently by the statement—made especially by French clinicians—that the withholding of sodium chlorid results often in the disappearance of nephritic edema. It would seem that this requires further confirmation and study. It is quite conceivable that this supposed deleterious action of salt does not depend on its direct action on the kidney, but that the withdrawal of the salt leads indirectly to the absorption of the effusions since they can not exist in the absence of salt. Were this the case, the result of salt-withdrawal would be mainly symptomatic. The experiments of Castaigne and Rathery[1] seem to indicate, however, that salts may have an irritant action. The entire subject demands further investigation. In the meantime there can be little doubt that these diuretics may be extremely

27. J. C. Munro: Quoted in THE JOURNAL A. M. A., 1903, vol. xlii, p. 176.

28. Pouchet and Chevalier: Quoted from Biochem. Centbl., 1903, vol. ii, p. 174.

29. H. D. Haskins: Amer. Jour. Physiol., 1904, vol. x, p. 362.

30. Anten: Arch. Internat. d. Pharmacodyn., 1901, vol. viii, p. 455.

useful by removing metabolic poisons. Their efficiency in the removal of poisons introduced from without has been abundantly confirmed, and they must have a similar usefulness for removing toxic substances produced within the body. It is almost superfluous to emphasize that substances which are themselves toxic (such as lithium or potassium) should not be administered in nephritis; so that the choice is practically restricted to sodium chlorid and acetate. The useful eliminative effect of the former was shown very strikingly in experiments on the salt-poor milk diet of typhoid fever.[31] The salts incidentally cause an increased formation of metabolites, but this is more than counterbalanced by their increased excretion.

IONS WITH SPECIFIC ACTIONS.

A few ions have specific actions and must be considered separately:

Nitrates.—It has always been held that potassium nitrate is especially diuretic, and that the greater diurosis is based on a specific irritation of the renal cells. This opinion needs further proof. The evidence of deleterious action is more positive in the case of acids, large doses of which have given rise to albumin, and even to blood in the urine.

Chlorates.—These are also strong irritants, the urine becoming charged with casts, hemoglobin and methemoglobin. It is not known how far this action is direct and how much is due to the changes in the blood.

Oxalates.—The oxalates occupy a peculiar position. They form insoluble crystals in the course of their excretion, and these block up the renal tubules of the cortex. They also have a direct irritant action on the epithelium,[27] producing a vacuolar degeneration in the convoluted tubules. The glomeruli are but little affected. The stroma shows a slight focal round-cell infiltration. The urine becomes diminished in amount and contains a small amount of proteid, some renal epithelium and casts, and quantities of crystals of oxalate. The nephritic changes seem to occur only with very large doses, and it is doubtful whether they have any therapeutic importance.

Fluorids.—These have been but little studied. J. B. MacCallum[32] has recently shown that the injection of calcium salts causes serious interference with the secretion of urine. But it is questionable whether this ion can be absorbed sufficiently to produce this action from the alimentary canal.

THE ETIOLOGY AND PATHOLOGY OF GOUT.*

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THE ETIOLOGY OF GOUT.

In a consideration of the etiology of gout we must group the causative factors under two headings—(1) the predisposing etiologic factors, and (2) the actual disturbances of metabolism causing the disease.

During the fifteen years since the opening of the Johns Hopkins Hospital, from May 15, 1889, to May 15, 1904, there have been 54 cases of gout admitted to Dr. Osler's wards. These were out of a total of 17,100 medical admissions, or 0.31 per cent. Occasional reference to these cases will be made in the following discussion of the etiology and pathology of the disease.

I. THE PREDISPOSING ETIOLOGIC FACTORS.

(*a*) *Heredity.*—There is no doubt but that hereditary predisposition plays a very important part. Scudamore states that out of 523 gouty patients 309, or 59 per cent., gave a history of the disease in the parents or grandparents. Garrod found that the predisposition was inherited in 50 per cent. of his hospital patients. Among his private cases, however, he believed that the tendency was inherited in 75 per cent. In our series there were only 7 cases, or 12.9 per cent., in which a definite history of gout having existed in the parents or grandparents was obtained. In addition to these, 10 patients gave a history of "rheumatism" in their ancestors. In contrast to the rich, poor patients rather resent the implication that their parents or grandparents had gout, preferring to call the arthritic manifestations rheumatism. Fifty of our 54 cases belonged to the poorer classes and were admitted to the public wards, only 4 patients being treated in the private ward. There is a strong probability that in most, if not all, of the 10 cases giving a history of "rheumatism" in the ancestors, the arthritic disease was actually gout. Putting the most liberal interpretation on these cases and considering them all instances of gout, it would make a total of 17 cases with gouty ancestors, or only 31 per cent. It would appear, therefore, judging from this series, that gout in this country in the majority of cases is acquired or "freehold" and not inherited or "copyhold," to use the classification of old Sir William Browne. Although it is of rare occurrence, infants at the breast have been known to suffer from gout.

(*b*) *Age, Sex and Race.*—Gout is rare in infancy and childhood. This is illustrated by Scudamore's statistics of 515 cases. Only 4 occurred before the age of 17, the youngest being 8 years old. There were but 13 in the first two decades. When gout appears in very young individuals it is nearly always inherited. In our series the ages of the patients on first admission to the hospital, according to decades, were as follows: 1 to 10 years, no cases; 11 to 20, 2 cases; 21 to 30, 3 cases; 31 to 40, 11 cases; 41 to 50, 15 cases; 51 to 60, 15 cases; 61 to 70, 6 cases; 71 to 80, 2 cases. The largest number of cases occurred in the fifth and sixth decades, each decade having the same number of cases; that is, there were 15 cases between 41 and 50 years and the same number between 51 and 60. The youngest patient was a boy of 17 years, and the oldest a man of 76. The initial attack in the latter case occurred at the age of 48. General statistics show that the initial attack makes its appearance most frequently in the fourth decade, that is, between the ages of 30 and 40.

Males are more liable to the disease than females. Women appear to possess a relative immunity. Of 80 cases collected by a special commission of the French Academy, 78 were in males and 2 in females. In the medical wards of St. Bartholomew's Hospital there were 124 cases of gout admitted in 14 years, and, of these, 100 cases were males and 24 females. In the Johns Hopkins series there were only 2 females out of the 54. When gout occurs in the female it is nearly always inherited. In the two cases in women in our series there was a definite history of inherited gout in both instances. The relative infrequency of gout in the female is undoubtedly due in large part to the fact that they are much less liable to be exposed to the contributory etiologic factors to be mentioned later.

31. R. A. Hatcher and T. Sollmann: Amer. Jour. Physiol., 1902, vol. viii, p. 139.
32. J. B. MacCallum: Univ. Cal. Publ. Physiol., 1904, vol. i, p. 81.

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Pharmacology, and approved for publication by the Executive Committee: Drs. G. F. Butler, Solomon Solis-Cohen and O. T. Osborne.

The disease is relatively much more frequent in the white than in the colored race. It occurred in two negroes in our series. The diagnosis which was made clinically was substantiated postmortem by finding sodium biurate deposits in the cartilages of the big toe joints, scrapings from which showed the characteristic needle-shaped crystals of sodium biurate.

(*c*) *Alcohol.*—Alcohol has always been considered a most potent etiologic factor in gout. In fact, it probably ranks at the head of the list in importance among the predisposing causes. Fermented liquors, such as wine, particularly port and sherry, beer, ale and porter are much more injurious than the distilled liquors—whisky, brandy, rum and gin. Some other factor must play a part other than the quantity of alcohol itself. In Scotland, where whisky is drunk, gout is very much less prevalent than in Southern England, where beer is the chief beverage. It has not been shown that the greater acidity of the fermented beverages, nor the contained sugars and saline matters are responsible for their greater potency in causing gout. The use of fermented beverages, particularly beer, appears to be the chief etiologic factor in the production of this disease in the United States as elsewhere. The lighter beers of this country are considered less potent than the heavier beers of England and Germany. Fifty-two of our 54 cases used alcohol. Concerning the other two there were no data as to their alcoholic habits. Three of the 52 cases used whisky alone. Forty-nine had been beer drinkers for years. Most of these had also used whisky in moderation or to excess. Only two gave a history of the use of wine.

(*d*) *Food and Exercise.*—The food undoubtedly plays a large part in the production of gout. We have long been taught that meats, and particularly the red meats, are especially to blame, and are most injurious to the gouty individual once the disease is established. This statement must be accepted with some reservation. Sydenham stated the case clearly when he said: "Great eaters are liable to gout, and of these the costive more especially. Eating as they used to eat when in full exercise, their digestion is naturally impaired. Even in these cases, simple gluttony and the free use of food, although common incentives, by no means so frequently pave the way for gout as reckless and inordinate drinking." From the food standpoint it is the over-eating, combined with the taking of insufficient exercise, that does most harm. Neither the quality of the food nor its quantity does so much harm as the fact that it is "unearned by muscular exertion," as Ewart puts it. Gout is not confined to the rich, however. Dr. Osler says: "In England the combination of poor food, defective hygiene, and an excessive consumption of malt liquors makes 'the poor man's gout' a common affection." These were the conditions which largely prevailed in our series, as 50 of the 54 cases belonged to the laboring classes.

(*e*) *Effect of Lead Poisoning.*—Musgrave, Huxham and Falconer (1772) had previously called attention to the association between lead poisoning and gout, but it remained for Garrod to show the importance of lead as an etiologic factor. He found that one in four, or 25 per cent. of the gout cases that came under his care in hospital practice, had at some period of their lives been affected with lead, and for the most part had followed the occupations of plumbers or painters. Garrod's percentages have in general been confirmed by the observations of others. Of our 54 cases there were only 2 patients who presented definite evidences of lead intoxication. One was admitted for an acute attack of lead colic. The other was a young man, aged 28, who was admitted during an attack of arthritis of the left knee, and it was found that he had a definite "blue line" at the margin of the gums. It is of interest that this patient stated that his father died of "painter's colic." Both of these cases of lead gout were in painters. It would seem that undoubted saturnine gout cases are less frequent in this country than in England. Although there were only two cases of gout where it could be positively stated that lead poisoning co-existed, yet there were in all nine patients whose occupations exposed them to possible lead infection. Six of these were painters and three were tinners. Thus in 9, or 16.6 per cent. of the cases, lead was probably an important etiologic factor.

How lead acts in predisposing to the development of gout is still an open question. Garrod showed that the blood of patients suffering from lead poisoning contains an excess of uric acid. He pointed out that they were also especially liable to develop chronic nephritis, and drew the conclusion that the increased amount of uric acid in the blood and the frequency of gouty manifestations were caused by the lowered power of the diseased kidney to excrete uric acid. The majority of subsequent observers have supported this view. Sir Dyce Duckworth and Lancereaux both held that the lead acts injuriously through its effects produced on the nervous centers, Duckworth asserting that "this malign influence evoking such trophical changes in the entire vascular system and in the kidneys, as are prone to be produced by the morbid condition which we recognize as gout in its most comprehensive aspect."

(*f*) *Occupation.*—The workers in lead, painters, plumbers and tinners, are particularly liable to the disease. Six of our series were painters and three were tinners. There were three bartenders. The opportunity for free indulgence in malt liquors by the latter renders them especially prone to gout.

II. THE ACTUAL DISTURBANCES OF METABOLISM CAUSING GOUT.

With the possible exception of diabetes mellitus, the metabolism of no disease has so frequently been the subject of research, notwithstanding which there is still the greatest possible difference of opinion as to the actual chemical disturbances causing the disease. It seems safe to say that gout is due to defective metabolism of the nitrogenous foodstuffs ingested and of the nitrogenous products of tissue change. Defective oxidation is probably in part responsible for these metabolic disturbances.

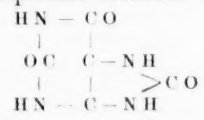
For decades, nearly all students of gout have held that the disease is due to disturbances in the formation or elimination of uric acid. In recent years evidence has been accumulating to show that the manifestations of gout are not entirely due to disturbances in uric acid metabolism, but possibly also to the toxic effects of certain closely allied nitrogenous compounds. Until further evidence is brought forward, however, we are forced to conclude that uric acid is, in large part, either directly or indirectly responsible for the gouty manifestations, and it is this organic compound which must chiefly occupy our attention in a consideration of the etiology of the disease.

(A.) URIC-ACID METABOLISM UNDER NORMAL CONDITIONS

To appreciate the metabolic disturbances in gout it is important that we should fully understand the physiology of uric acid and its closely allied compounds. Such a consideration will also enable us to familiarize our-

selves with the names of various nitrogenous compounds frequently used in gout discussions, the number of which is unfortunately being gradually added to.

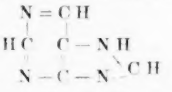
Uric acid has the empirical formula $C_5H_4N_4O_3$ and the structural formula



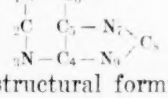
It is not necessary for our purpose to consider the various views that have been held regarding the formation of uric acid in man. To avoid prolonging the discussion unnecessarily, it is sufficient to say that the generally accepted view at the present time is that uric acid is derived from the nuclein resulting from nuclear destruction. At least four other nitrogenous compounds are known to be derived from nuclein. These are xanthin, hypoxanthin, adenin and guanin, and they constitute the so-called nuclein bases. These, with uric acid, are derived from the nuclei of the leucocytes and from the nuclei of the tissue cells throughout the body; also from the nuclear material of the ingested food. In addition to these there are several other compounds which are closely related in structure. They all contain carbon, hydrogen and nitrogen, and in most cases also oxygen. These closely related nitrogenous compounds, with their formulæ, are as follows:

1.	Uric acid	$C_5H_4N_4O_3$
2.	Xanthin	$C_5H_4N_4O_2$
3.	Hypoxanthin	$C_5H_4N_4O$
4.	Guanin	$C_5H_5N_5O$
5.	Adenin	$C_5H_5N_5$
6.	Heteroxanthin	$C_6H_6N_4O_2$
7.	Paraxanthin	$C_7H_8N_4O_2$
8.	Episarkin	$C_4H_6N_4O$ (?)
9.	Carnin	$C_7H_8N_4O_3$
10.	Epiguanin	$C_6H_7N_5O$

These ten compounds collectively were given the name alloxuric bodies by Kossel and Krüger, whereas the last nine constitute the alloxuric bases. The term "alloxuric" was applied to them because each is made of an alloxan and a urea nucleus. Emil Fischer[1] has shown in many ways that there is a close relationship between uric acid and the various other members of this group. He has further demonstrated that it is possible to prepare a number of them synthetically, one of the most remarkable discoveries in physiologic chemistry in recent years. He finds that they are all derived from a combination $C_5H_4N_4$, called "purin," having a carbon-nitrogen nucleus, the "purin nucleus" as basis. Purin, according to Fischer, has the formula



and the different purin bodies are derived therefrom by the substitution of the various hydrogen atoms of by hydroxyl, amid or alkyl groups. In order to signify the different positions of substitution Fischer has proposed to number the nine members of the purin nucleus in the following way:



In observing the structural formula of uric acid given above it will therefore be seen that uric acid is 2, 6, 8 trioxypurin. Xanthin, accordingly, is 2,6 dioxypurin; hypoxanthin is 6, oxypurin; adenin is 6, amidopurin, and guanin is 2 amido—6, oxypurin, etc., etc.

In order to make clear certain terms frequently used to designate the ten nitrogenous compounds tabulated above it may be said that they are collectively called the alloxuric or purin bodies; whereas, those from 2 to 10 inclusive are termed the alloxuric, purin, nuclein or xanthin bases. Hence it will be seen that the alloxuric or purin bodies comprise uric acid together with the alloxuric, purin, nuclein or xanthin bases.

The close relation between uric acid and the xanthin or nuclein bases and their common derivation from nuclein is shown by the following scheme:

Experimentally this has been clearly shown by Horbaczewski. This observer found that by adding some oxidizing substance, such as fresh blood, to spleen pulp or spleen nuclein, and then keeping the whole at a constant temperature of 45 C. for several hours, he obtained a certain amount of uric acid. If, on the other hand, no oxidizing agent were added and only heat applied, he was unable to obtain any uric acid, but secured an identical amount of nuclein or xanthin bases as indicated by the nitrogen contained in each. He believes that the uric acid is not formed from the alloxuric bases as an intermediate step, but that all alloxuric bodies are derived from the nucleins—the uric acid when cleavage precedes an oxidation, and the alloxuric bases with cleavage without oxidation.

The feeding of nuclein to man and dogs is followed by a marked increase in the excretion of uric acid. Horbaczewski, who advanced the theory that uric acid was derived mainly from the nuclein of the leucocytes, thinks that the increase in the uric acid after nuclein ingestion is not due to the nuclein directly, but to the nuclein derived from the increased number of leucocytes produced by the nuclein. An amount of proteid not containing any purin or nuclein bases but containing the identical quantity of nitrogen does not produce a similar rise in the excretion of uric acid, as has been demonstrated by Schmoll and Kaufmann.

The purin bodies from which uric acid is mainly derived come from two sources, and for this reason Burian and Schur have termed them the "endogenous" and "exogenous" purins. The "endogenous" purins are those derived from the nucleins of the body, whereas the "exogenous" purins are those introduced with the ingested food. So also we speak of "endogenous" and "exogenous" uric acid when it is derived from these respective sources. By use of a diet free from purin bodies (such as milk, eggs, butter, cheese, white bread, rice, sago and fruits) it has been possible to estimate the quantity of nuclein derivatives or purin bodies which arise solely as a result of cellular processes. The results of various investigators show that the endogenous purins excreted in the urine in twenty-four hours varies from 0.10 to 0.20 grams expressed in terms of nitrogen. The quantity of endogenous purin which appears in the urine only represents a certain percentage of the whole amount of nuclein decomposed in the body. The remainder is transformed by the liver cells and excreted as urea or as bodies intermediate between purin bases on the one hand, and uric acid and urea on the other. Allantoin constitutes one of these intermediate bodies. Of the total purin bodies of the urine, nine-tenths are present as uric acid and one-tenth as xanthin or purin bases.

According to Hammarsten we can not say anything positive in regard to the organ or organs in which uric acid is normally formed. The liberation of the purin

1. E. Fischer: Berichte d. deutsch. chem. Gesellsch., vol. xxx.

bodies from the cells in the case of the endogenous purins and the absorption from the intestinal tract in that of the exogenous purins lead to their presence in the lymph and ultimately in the blood stream. In the tissue spaces it is probable that the purin bodies are to a slight extent oxidized into uric acid, but the liver is in all likelihood the organ in which these waste products are eliminated. The purin bodies leave the liver in some form of uric-acid organic combination or as intermediate bodies between uric acid and urea. Burian and Schur have shown that the uric acid resultant from the intake of exogenous oxypurins varies from 40 to 60 per cent. of their total purin content. In the cat and dog, however, the percentages are considerably lessened, and allantoin is met with in large quantities. Allantoin results from a further decomposition of uric acid. Sir Alfred Garrod, Luff and Latham hold that the final formation of uric acid takes place in the kidneys. Zaleski after extirpating the kidneys of snakes and v. Schröder after extirpating these organs in birds have shown that there is an accumulation of uric acid in their blood and tissue. These experiments show that the kidneys of birds and snakes are not the only organs producing uric acid, and Hammarsten states that no direct proof of the formation of uric acid in the kidneys has up to the present been demonstrated.

Form in Which Uric Acid Circulates in the Blood.—There is still considerable difference of opinion as to the form in which uric acid circulates in the blood under normal conditions. Uric acid is a dibasic acid, and as such may be represented by the formula $H_2(C_5H_2N_4O_3)$. It thus has two atoms of replaceable hydrogen. According to Bence-Jones and Sir William Roberts, it forms three groups of salts and for the purpose of illustration sodium may be indicated as the replacing metal. The salts are as follows: (1) Neutral sodium urate, $Na_2C_5H_2N_4O_3$. (2) Biurates or acid sodium urate or sodium biurate, $NaHC_5H_2N_4O_3$. (3) The quadriurates in which a metal takes the place of one-fourth of the displaceable hydrogen of two molecules of uric acid loosely combined, such as $NaHC_5H_2N_4O_3$, $H_2C_5H_2N_4O_3$, the sodium quadriurate.

The neutral urates are purely laboratory compounds, and under no circumstances occur in the human economy. The biurates do not occur physiologically. It is important to remember, however, that this is the form in which uric acid is deposited about the joints and in tophi in gout. Free uncombined uric acid never occurs in the tissues or blood, either under physiologic or pathologic conditions. Sir William Roberts holds that the uric acid circulates in the blood as the loosely combined, readily soluble quadriurate and in this view he has had many supporters. The general view at present is that uric acid or its combinations cannot be demonstrated in the circulating blood of normal individuals by the methods now available, although Abeles claims to have found traces in human blood under normal conditions. The inability to demonstrate uric acid in normal blood is believed to be due to its being in loose organic combination with some other purin product which consequently prevents its precipitation by the usual reagents. Minkowski holds that the uric acid is in combination with the purin base, nucleotin-phosphoric acid, and that it is in this form that it circulates in the blood. This side of the subject still requires investigation.

Daily Excretion of Uric Acid.—The amount of uric acid eliminated in the urine daily by a healthy adult of average weight, and on a mixed diet, may be said to range between 0.4 and 1.0 grams. Hammarsten gives 0.7 gram as the average daily excretion in the urine. It may be repeated here that of the total purin or alloxuric bodies eliminated in the urine, nine-tenths are present as uric acid and one-tenth as purin, alloxuric, xanthin or nuclein bases. The ratio of uric acid to urea varies considerably with a mixed diet, but is on an average 1 to 50 to 1 to 70. The exact form in which uric acid is eliminated in the urine has not been definitely ascertained, but Bunge and later Rüdel suggested that it is here also excreted in loose combination with some other organic substance. They hold that this combination is easily broken up and the uric acid is then set free. It may then either remain free or enter into combination with the sodium, potassium or ammonium contained in the urine.

(To be continued.)

EDITOR'S NOTE: The remainder of the paper of Dr. Futcher will appear next week with the paper of Dr. Hutchinson and the discussion.

THE RATIONAL APPLICATION AND VALUE OF SPECIFIC TREATMENT FOR TUBERCULOSIS.*

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SARANAC LAKE, N. Y.

Tuberculin and antitoxic serum are, strictly speaking, the only real specifics related to tuberculosis. I shall, therefore, restrict my observations to these and endeavor to present some thoughts on their rational use, limitations and value in the light of our present knowledge of their effects. I must state at the outset that my personal experience with these methods is for the most part confined to laboratory and experimental observations. Whatever may be thought by some of the value of such observations, it must be remembered that man has not been found an exception among animals in the application of the general principles worked out by animal experimentation.

In order to formulate some ideas about the propriety of employing tuberculin as a treatment, one should first consent to an unprejudiced investigation of its utility and danger. Ignorant haste, both in its use and condemnation, characterizes the history of tuberculin treatment, for it is only since the problems of immunity in general have been successfully studied that we have had other than empirical ideas about its action. Even now the local reaction is not fully explained, though this was recognized from the first as most peculiar, and to it Koch attributed its healing properties. More recently the immunization of the patient has been an object in view in addition to the healing of ulcerations, both of which have proved to be possible by experimental investigation. The principles involved in this immunization are the same as those now known and used for many other purposes where the injection of a foreign substance excites the tissues or cells of an animal to produce a specific antagonism to it. In the case of tuberculin it is now known that this acquired antagonism or tolerance may be expressed by the production of an agglutinating or coagulating substance in the serum which acts on the bacilli by clumping them or on solutions of tuberculin by forming a precipitate. In this way an explanation

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Pharmacology, and approved for publication by the Executive Committee: Drs. G. F. Butler, Solomon Solis-Cohen and O. T. Osborne.

is given of the gradual diminution of the local and general reaction when tolerance is acquired to tuberculin by all the tissues, for we may understand that it becomes bound or combined before reaching the general circulation or periphery of the tubercles where the cells appear to be especially sensitive to its presence.

In fact, v. Behring's[1] recently expressed opinion as to the cause of the local reaction is in line with this explanation. He thinks that the smallest blood vessels around the tubercles secrete coagulating or agglutinating antibodies, which act on the soluble substances derived from the tubercle bacilli. Thus there follows the intravascular coagulation, capillary engorgement and extravasation of red and white blood cells which characterize a typical local tuberculin reaction. This theory is the more plausible because quite marked febrile reaction may occur in tuberculous subjects from other causes without typical local congestion about the periphery of the tubercles, such as are produced by tuberculin. This I believe to be an important distinction between true tuberculin reactions and those so-called reactions produced by other substances. The independence of a fever reaction from a local one is thus possible in so far as that fever may occur without the usual signs of hyperemia about tuberculous foci, though the reverse is not generally true. It is well known that under certain conditions a hyperemia produced intermittently about tuberculous and other ulcerations favors cicatrization. Whether or not mild temperature or local reactions are necessary, they seem to hasten the healing according to most observations. We therefore have two possible ends of importance attainable by tuberculin. We may succeed in fortifying the patient artificially against the specific poison and at the same time under this stimulus aid in healing an otherwise sluggish tuberculous ulcer.

During the process of immunization against tuberculin a certain degree of immunity is obtained against the disease, but after the injections have reached a maximum dose, beyond which there is no local reaction and no increase of agglutinative power in the blood, it is useless and generally harmful to proceed further. This biologic law of maximum cell stimulation is a more or less general one, and it has been found that two or three months is the period within which this occurs. This is confirmed by clinical experience with tuberculin treatment. It is decidedly more rational to give several courses of treatment, with intervals, as recommended by Petruschky,[2] should one not be sufficient for healing. Experience has shown that a high agglutinating power in the blood is generally coincident with heightened resistance to the disease, but not invariably so, and, after the cessation of the injections, the specific resistance both to the poison and to the disease is gradually lost. The condition of the individual undergoing an immunization against tuberculin should obviously be such that his cells are not already overburdened by the effects of the disease, for to add to this would simply mean more poisoning, an irrational and inexcusable thing. This fact precludes the safe treatment of most of the advanced and progressive cases of pulmonary tuberculosis, though not necessarily excluding certain chronic cases in good nutritive condition.

During a tuberculin reaction, and for a time afterward, the so-called serum complement is found to increase, and leucocytosis also is present. Their exact relation to tuberculosis may be regarded by analogy as favorable, though not understood in many respects.

1. Deutsch. med. Woch., Sept. 24, 1903.
2. Berlin. klin. Woch., Dec. 18-25, 1899.

Concerning the danger that the bacilli may be scattered during the local reaction, much has been asserted, but little proved. In fact, except when first given in doses that were reckless in the extreme and to patients with progressive disease, I know of no reliable evidence that this result actually occurs. Even the oft-quoted opinion of the late Professor Virchow during the first tuberculin craze was said to have been greatly modified by its author in later years. The isolated instances in which the disease is alleged to have been lighted up into activity by tuberculin, used either for diagnosis or for treatment, always lack complete proof that these relapses would not have occurred without tuberculin. The question is thus reduced to a matter of opinion. Nevertheless, it must be remembered that the conditions are such during a violent local tuberculin reaction as to favor the scattering of tubercle bacilli, because the blood and lymph streams are then much more active about the tubercles. It would seem reasonable that considerable danger of spreading the infection with the formation of few foci would exist at such times. The experimental evidence and the clinical experience of those who have had most opportunity to form unbiased opinions are, however, decidedly against this view. Moreover, it would seem that even if bacilli were set free by the reaction they must quickly die and disappear without producing new foci of disease. Otherwise a prolonged fever reaction and other indications of fresh disease would be common. The actual effect of tuberculin in suitable cases is distinctly favorable, judging from the absence of fever after the reaction, lessened expectoration, and cicatrization of ulcers.

Having mentioned the chief points concerning the physiologic action and dangers from the use of tuberculin, we may be able to form some rules for its clinical application. It should be evident at once that all forms of acute tuberculosis are to be excluded from this treatment both on account of the danger of increasing the load for the already poisoned cells, and of the possible extension of the disease either from the increased inflammation or from the decreased resistance. For similar reasons patients with extensive or advanced lesions complicated with other infections, renal or intestinal disease, are to be excluded. There would then remain as suitable for treatment only early, localized, apyretic cases, with some arrested or quiescent ones of longer standing which have good nutrition. Some more advanced or chronic cases which still have good resisting powers have been very successfully treated by tuberculin in spite of some fever. As a rule, however, it can not be recommended on rational grounds for such cases.

The form of its administration has been the subject of various modifications, but at present, with the object of immunization in view, the most rational preparation would seem to be the emulsions of the entire substance of the bacillus unaltered by heat. It must be said that these emulsions are more difficult of absorption, and may not be entirely sterile without the addition of some chemical germicide, if not heated. The various extracts of tubercle bacilli in use all produce the specific local reactions, and possibly some increased resistance to the disease, although there is reason to think that the poison is somewhat altered by heat in its preparation. It is, after all, difficult to say that one preparation has any superiority over another from clinical results thus far obtained. The dosage, intervals between the injections and careful observations of temperature and other symptoms require so much care that its use is practically confined to institutions, while the restrictions under which it seems safe

to give it are so many that its value is thereby considerably limited.

The active immunity or heightened specific resistance to be obtained by tuberculin, however short in duration, is an ideal object in the therapy of tuberculosis, for it might tide the patient over a sufficient time to complete the healing of an open tuberculous ulceration, which is a menace of reinfection or mixed infection so long as it remains open.

The results in simple sanatorium régime are so good in patients who are favorable from the beginning that I should question the wisdom or desirability of tuberculin treatment for a routine in such cases, although there is evidence that relapses are somewhat less common after its use. Whether this is due to any prolonged immunity is doubtful, judging from the return of tuberculin susceptibility after cessation of treatment. I am more inclined to the idea that the cicatrix may be somewhat stronger after tuberculin.

When a patient fails to recover under the usual hygienic-dietetic treatment after a reasonable time—for example, in six months or a year, according to the amount of ulceration—there is great danger that the disease will be chronic in spite of otherwise favorable factors, such as a normal, or practically normal, temperature and general health. I think physicians who have much experience in health resorts and sanatoriums recognize what may be described as arrested and uncompleted cases, whose physical signs do not indicate extensive ulceration, yet continue to have expectoration with bacilli as practically their only symptom. It is in these cases that the use of tuberculin seems to me most rational and safe. They have much to gain if the ulcer can be healed, and, if one may judge from the statistics that have gradually been accumulating, more persons may be healed with its aid than without it.

It is not too much to hope that the future may bring us further improvement in the application of an immunizing therapy for tuberculosis.

In many papers that have appeared in this country the terms "tuberculin" and "serum" treatment seem to mean one and the same thing to the writers. Since antitoxic serum is generally intended in "serum" treatment, it should be so stated. When serum is assumed to have active immunizing properties, of course the synonymous meaning given would be correct.

Antitoxic serums for tuberculosis were much vaunted several years ago, and the good effects obtained in this treatment were ascribed to the direct neutralization of the tuberculous poisons. Some experimental evidence was produced which led to this belief, but it rested solely on the fact that a minimum reacting dose of tuberculin could be inhibited by serum from an animal immunized against tuberculin in its various forms. No clinical proof of such effects in lowering a pure tuberculous fever has been given that is at all satisfactory nor does experiment indicate that serums neutralize the poisonous effects of the disease in the animal. A possible explanation of the antagonism to tuberculin when an anti-tuberculous serum is mixed with it before the injection is that a precipitation may take place which prevents the absorption of the tuberculin. This has been demonstrated to be possible in some of my own experiments, but by no means constitutes proof of antitoxic power comparable to that of diphtheria antitoxin. On the whole, one is led to think that the good results reported in sero-therapy for tuberculosis are due neither to a direct nor indirect antitoxic power. Indirect production of antitoxin implies a specific stimulus from the serum acting on the cells of the patient under treatment; in other words, either tuberculin in the serum or a hypothetical bactericidal power, neither of which is thus far proved. If there is any other manifestation of antitoxic activity that does not exhibit itself by reducing the temperature, I am confident that it must be very weak. A critical estimate of the clinical results of anti-tuberculous serum treatment produces the impression that the favorable results may be accounted for by the non-specific stimulus given to the tissues, which may aid nutrition. Moreover, two reasons appear to me obstacles to any successful serum therapy in tuberculosis: First, the difficulty of its reaching the seat of the poison, which is in the bacillus itself, lodged in caseated tubercles, and for the most part exerting its effects locally. Second, the serum injections excite antibodies against themselves when repeatedly administered even in small amounts, as will any serum alien to the animal injected.

While we ought to be alert for any addition to the therapy of tuberculosis, it is too often forgotten that the maintenance of a high nutritive condition in the patient is a prerequisite for their usefulness, and in the final analysis most of the benefit derived from them will depend on this factor.

DISCUSSION.

DR. V. Y. BOWDITCH, Boston, said that when tuberculin first appeared he used it in several cases, including cutaneous and pulmonary tuberculosis. The results were *nil*. He then decided to wait for further instruction from Koch before experimenting further, but, yielding to the opinion of those whose judgment he respects, he has used it several times at the Sharon and the Rutland sanatoria, but never in private practice. He has always felt uncertain as to the results. In most of these cases he has used it where he had a suspicion of tuberculosis in order to confirm the diagnosis, chiefly to satisfy the "doubting Thomases" who would perhaps challenge the results. He had two cases in which 10 mg. failed to give any reaction, but in which blood spitting occurred later, whether due to the use of tuberculin or not he was unable to say. In other cases there was no reaction to 10 mg., yet tubercle bacilli were found in sputum ejected just before the injection was given. He has had one or two cases that have seemed to make a decided improvement after a diagnostic dose was given, but whether this improvement was *post hoc* or *propter hoc* it would be impossible to say; he regards it simply as a coincidence. As to the number of relapses in cases where the disease has become arrested, he forms his opinion largely on what Dr. Trudeau said to him at one time, that the number of patients who relapsed after the use of tuberculin is slightly less than in those in whom it had not been used. If there had been any decided effect from its use, it seems that the number of the former should be very much less in order to carry much weight. Dr. Bowditch agrees with Dr. Baldwin in regard to the necessity of carrying on these clinical observations in institutions. There seems to be much uncertainty about the observations made by physicians in this matter, especially in dispensary practice. Patients who have gone away and come back with a history of headache, malaise, etc., after the use of tuberculin have been recorded as having had a reaction, a conclusion which seems quite unwarranted and not scientific. In reports of cases which have been using certain vaunted methods of treatment it frequently happens that the value of improved hygienic surroundings alone has been scarcely taken into account. In his opinion no special method of treatment can be fairly tried until after hygienic methods have been fully tested first and found wanting. Dr. Bowditch said he had only used one serum, and in that case the results were absolutely negative. He could not see what good it would do to give patients hypodermic doses of tuberculin before they leave an institution to see that they do not react, because specific resistance to the tuberculin has, after a time, become weakened or lost.

Dr. J. W. Foss, Phoenix, Ariz., stated that he had had considerable experience with advanced cases of pulmonary infection which had been considered hopeless. In this class of cases there is usually a mixed infection. In the cases showing streptococci infection in the lungs he has used streptolytic serum for the past two years with most satisfactory results. One of his earliest cases was a physician whose case was considered absolutely hopeless. He had a well-marked mixed infection of the lungs, consisting of streptococci pyogenes, staphylococci, tubercle bacilli and pneumococci. He was given the serum and in three months had gained 28 pounds. This was over two years ago. He is still living and attending to his duties as railroad surgeon, and considers himself well. It is the opinion of Dr. Foss that this treatment is very valuable in a large percentage of cases in mixed infection of the lungs which have hitherto been looked on as hopeless. In his examination he always looks for the streptococcus pyogenes, and if his patient is not doing well he uses this treatment. He has observed that when there is a persistent excess of amorphous urates in the urine that the case usually terminates fatally. He has had cases of well-marked mixed infection showing a rapid progress of the disease in the lungs. After giving the serum, expectoration and cough entirely ceased within a few months. He usually gives 20 c.c. at the first dose, followed by 10 c.c. daily, injected subcutaneously in the back or abdomen, never in the limbs. His cases have required from 140 to 320 c.c. of the serum. All cases have a reaction more or less severe, consisting of urticaria, edema, pain in the joints and a small percentage of the cases have had cyanosis. He has never had any serious results from the use of the serum.

Dr. Edward O. Otis, Boston, asked Dr. Foss if he referred to the use of antistreptococcic serum in these cases of mixed infection, and if he made any difference between the treatment of those with streptococci and those with both streptococci and staphylococci, and whether he does not find both of these organisms in the advanced cases along with tubercle bacillus. Dr. Otis said that he had had but little experience with antistreptococcus serum, and then with no results, but he has used tuberculin in over 150 cases for purposes of diagnosis, without any bad results. After remarking that pulmonary tuberculosis was treated either principally by drugs, by a combined drug and outdoor treatment, principally outdoor, and by treatment with the various antitubercle sera, he said that by the latter alone we have not as yet been able to eliminate or obtain immunity from the bacilli. He thinks that for the present the best treatment is the hygienic and dietetic treatment, with very few drugs. His own experience leads him to place very little confidence in any drug whatever. He has used large amounts of creosote, for example, and is convinced that it has very little effect except possibly on the digestive organs. The results are best when we rely on the dietetic and hygienic treatment. When such good results are obtained by it as we find at Rutland, we should be encouraged, especially as the climate of Rutland, Mass., is not an especially good one.

Dr. R. C. Newton, Montclair, N. J., called attention to work done by the New York Board of Health. Dr. Herrold of this board, guided by the fact that the antitoxic serum from horses that have been immunized from diphtheria will cure diphtheria, concluded that horses that had been immunized by injections of cultures of the toxins derived from cases of tuberculosis and mixed infections, would furnish a serum that could be used against human tuberculosis. The experiments with this serum have thus far given promising results. One case is now practically well and another case is doing very well. The cases are, so far, too few from which to draw any positive conclusions. Dr. Herrold's idea is that it is the effect of the mixed poisons, and not that of the tubercular infection alone that is to be overcome by the serum, and that every tubercular patient should receive the serum in repeated injections from a healthy immunized horse. He gets the horse to the point where it will no longer react, and then he begins injecting the serum into the patient. Dr. Newton said that we are in duty bound to thoroughly test any plan of treatment which may by any possibility prove to be valuable in the treatment of this disease.

Dr. John H. Lowman, Cleveland, said that those who have reported the best results from tuberculin are those who have used it in the very smallest doses. It is claimed that the smallest number of relapses and the highest percentage of cures are obtained in Silesia, and that he was very much interested, in making a tour of these institutions in Germany, to find that those who used the tuberculin treatment were those who had graduated in Koch's laboratory. Dr. Lowman said that the cases in Cleveland have been advanced cases. In diagnostic cases the serum treatment has been satisfactory. It has been used in bone cases, in Pott's disease, in chronic pleurisy. He has used it in several cases to detect the character of the pleurisy. He has not been able to completely satisfy himself as to the real value of this substance, even from the diagnostic standpoint.

Dr. Lawrason Brown, Saranac Lake, N. Y., said that, at the Adirondack Cottage Sanitarium tuberculin has been used since 1890, when Koch first announced his discovery. In all, about 160 cases have received it. One of the immediate results of tuberculin treatment is that the percentage of patients who have lost their bacilli is greater than the percentage of such in the total number of cases (1,500). The ultimate results show that the tuberculin treated cases have fewer relapses. These results may be criticised because many of the cases were carefully selected, and many who received tuberculin remained a much longer time under hygienic-dietetic treatment. At first the old tuberculin of Koch was used in selected cases, but lately the bacilli have been used in emulsion containing the entire substance of the pulverized tubercle bacilli. The whole question of secondary infection is one much involved at present. It is difficult to determine from the sputum whether or not secondary infection is present.

Dr. J. H. Elliott, Gravenhurst, Canada, stated that in his sanitarium experience most of the cases admitted have been advanced cases, and for this reason he has not used tuberculin for diagnostic purposes, because the diagnosis has been only too evident. In one or two cases lately, however, it has been used and with good results. He has afterward found tubercle bacilli in the sputum of some patients, and has wondered whether or not the appearance of the tubercle bacilli might have been the result of the tuberculin injection. But as they disappeared in a short time under treatment, the patients were not injured by it. All who are engaged in sanitarium work find a class of cases where after marked improvement the patient remains stationary. The bacilli remain and the case does not further improve. He has used the antistreptococcus serum in a small number of cases with sufficient results to encourage its further use. The examination of the sputum in this respect seems rather faulty. A streptococcus serum is used, but we can not say whether or not the serum is from the same variety of streptococcus as that in the patient. In some cases it has been necessary to discontinue the use of the serum on account of a rash, or severe joint pains. One case of pelvic suppuration with multiple abscesses and alarming symptoms yielded very rapidly to antistreptococcic serum injections.

Dr. J. W. Foss said in reply to Dr. Otis that he has found staphylococci in the sputum in many cases associated with streptococci. They usually disappear after treatment with the serum. It is his opinion that the improved condition of the patient after the elimination of the streptococci may be responsible for this result.

Dr. Edward R. Baldwin said that at the present day we know that laboratory methods in diagnosis are somewhat overrated. For instance, Widal's test, when it was first introduced, was thought to be decisive, but now it is mixed up with paratyphoid and other diseases, and requires much laboratory experience in order to interpret the results. While the diagnosis of tuberculosis by the use of tuberculin is of great value, there is frequently some idiosyncrasy which impairs the value of the result, and the best estimate as to its value places it at about 75 per cent. There are also a certain number of cases which will not react. If persons react to minute doses of tu-

bereulin, it is probable, in more than 75 per cent. of cases, that they have tuberculosis in some part of their body. Such large doses as were given by Koch's directions (up to 10 mgr.) are rarely required in the diagnosis of pulmonary tuberculosis. Dr. Baldwin thinks that the whole condition of the patient should be taken into consideration in the matter of diagnosis. If tuberculin is given it should only be in the most minute dosage. It should not be given on any consideration to a patient whose temperature at night is 99.5 nor to one who has not been under observation for some weeks. Therefore its field in diagnosis is very narrow. It is a very unpleasant experience to have a bad result attributed to the use of tuberculin. The best method, in his opinion, is the diagnosis by exclusion. He is quite certain that the tuberculin reaction can be obtained in healed tuberculosis except in those cases where the tubercles are wholly fibrous or calcified. In other words, in the greater number of persons who have had tuberculosis, this reaction may be obtained. He mentioned a patient who took tuberculin as a treatment until he no longer reacted to large doses, and was healed. That was six years ago. Recently tuberculin was again administered and a reaction occurred. Therefore, in Dr. Baldwin's opinion absence of reaction is no sign of a cure, because the susceptibility gradually returns. He has known unfavorable symptoms to occur after treatment with antidiphtheritic serum, antitetanic serum, and other kinds. These symptoms are very alarming and are liable to deter a physician from any kind of serum treatment. They may be explained on the ground that they are due to thrombosis in the minute capillary vessels and not to any specific ingredients in the serums. Dr. Baldwin agreed with Dr. Lowman that there is a great deal of what might be called the personal element with regard to the tuberculin treatment in Germany. Professor Koch has a great many critics and a great many enemies in his own country. The Berlin and Vienna schools are not always harmonious. We can not but admire the absolute thoroughness with which the Germans do their work; but we can not admire the personalities they indulge in, which are condemned by the scientific world, in Germany and in this country alike. With regard to the Adirondack Sanitarium cases and the results from tuberculin treatment, they can be criticised on account of the early character of the cases. Of course it would be of more convincing value if tuberculin should not be used in the treatment of pulmonary tuberculosis, until other methods have been given a fair trial.

INJURIES TO THE RECTUM CAUSED BY GYNECOLOGIC EXAMINATIONS.*

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Unfortunately, all risk to our patients is not incurred solely in the course of our aggressive modern methods of operating, as experience shows that the preliminary examination itself may even be a source of danger. The injury done by a gynecologic examination may fall on the structure which is being examined, or on the enveloping structures which constitute the wall of separation between the object and the examining fingers, occasioned by the effort on the part of the examiner to overcome the resistance offered by the barrier to palpation and the sense of touch.

The injury thus incurred may be due either to the delicate nature of the tissues examined, rendering them liable to damage from the slightest violence, or to an unduly rough examination such as we too often witness, or to both of these factors combined. The examiner may in this way rupture, intra-abdominally, a thin-walled papillary ovarian cyst, and so become responsible for the dissemination of its contents over the previously sound peritoneum. He may rupture, as I have seen done, a vascular cystic sarcoma of the ovary in which the malignant elements had hitherto remained confined within the cyst walls.

I have seen an extrauterine pregnancy ruptured by an examination, and I have heard of one ruptured in this way, from which the patient died. Pelvic abscesses, too, are not infrequently spread abroad by unwise handling in the effort to make an accurate diagnosis; operators of large experience in diseases of the vermiform appendix have observed the disappearance of a well-defined collection of pus immediately after an unduly zealous palpation. In the hospital in which I was a resident twenty-two years ago, one of the attending physicians ruptured a liver abscess in this way, and distributed its contents through the abdomen, with a fatal result.

Lesser injuries, such as the rupture of the thin-walled large graafian cystic follicles, by the operator or by his assistants, in the course of an examination made just before an operation, have doubtless repeatedly been noted and verified within a few minutes at the operation by other operators as well as by myself.

These injuries, however, are all intra-abdominal and confined to collections of fluid within more or less thin-walled cysts or limiting membranes; injuries to the intervening structures, which separate the examining fingers from the object of the examination, are far less common.

The enveloping walls which are subjected to pressure in the course of a gynecologic examination are the strong musculotendinous and cutaneous walls of the abdomen, the tough musculomembranous vagina, and the more delicate musculomucosa of the rectum.

The only injuries I have ever seen sustained by the abdominal wall have been done to the capillaries, as evidenced by little effusions of blood under the skin, which subsequently pass through the characteristic color changes. I have never seen a distinct hematoma, or an abscess produced in this way. Sometimes the too long finger nails abrade the skin, and these lesions might easily become avenues of infection.

I have not yet seen any injury done the vagina by the examining fingers, although I have witnessed many cases of perforation of the uterus by a sound, and in one instance perforation and death by a dilator loaned to a physician; it is not my purpose, however, to dwell on injuries due to instrumentation.

Of all the avenues of investigation of the pelvis, it is the rectum which is the most delicate, and, I believe, the most liable to serious injury. I desire to report briefly four cases in which the coats of the bowel were actually perforated by the examining finger, which was thrust through the rectum and into the peritoneal cavity. All of these injuries have occurred in my own personal experience in my hospital practice within the past fifteen years, not in the hands of inexperienced students, but in the course of an examination made by a competent assistant, and once my own finger was responsible.

CASE 1.—Mrs. J. S., a married white woman, 52 years old, was etherized for dilatation and curettage for an excessive menstrual flow. During an examination of the pelvis by the rectum, the finger was pushed through the bowel into the abdominal cavity.

An incision was at once made posterior to the cervix in the vaginal vault, through which a vertical rent was found in the rectum 4 cm. above the cervix and 13 cm. from the vaginal ori-

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fice; this was closed with fine black silk sutures, and recovery followed without any ill effects.

Case 2.—Mrs. E. W., a married white woman, 63 years of age, who had a cystitis. At an ether examination made in order to determine the condition of the pelvic organs, which were found normal, the finger was pushed through the rectum into Douglas' cul-de-sac. The opening into the peritoneal cavity was at once exposed by an incision in the vaginal vault back of the cervix, and repaired with fine silk sutures. An iodoform gauze drain was brought out through the vagina. Recovery followed, complicated by a fecal fistula, which closed spontaneously.

Case 3.—Mrs. C. J., white, aged 58, had a large left ovarian cyst, widely adherent to the intestines and omentum, weighing, with the contents, 15,000 grams. During the rectal examination, which I made before the anesthetic was given, my finger was pushed through the rectum into the peritoneal cavity. As the abdomen was about to be opened and the rent was sufficiently plugged by the tumor filling the pelvis, I made the abdominal incision and removed the tumor, and so exposed the rectal tear, which was closed with fine silk sutures. There was no soiling of the peritoneum apparent, and no drainage was used. She made an uneventful recovery.

Case 4.—Mrs. L. L., white, aged 28, suffering from excessive menstruation, was anesthetized August 25 for curettage and diagnosis. In the course of the rectal examination the index finger was pushed through in the peritoneal cavity. A piece of gauze was passed through the opening in the rectum and brought out at the anus, but as there was a manifest peritonitis coming on the next day, the abdomen was opened and the rectum closed with fine silk sutures and the pelvis drained. She made a slow recovery, leaving the hospital forty-five days later.

I think the cause of these injuries lies in the age of the patients (in three averaging about 57 years) and the weakened muscular tone of the bowel. In one it is significantly noted that the patient was very stout. In such cases not only is a greater effort made to reach the deeper seated structures in an examination, but the tissues are far more friable.

I believe the proper treatment is, in all cases, to open the peritoneum at once and carefully suture the rent from the peritoneal side. It would be better to use two layers of fine silk sutures rather than one. A washed-out iodoform gauze (Saenger) drain should be inserted through the vaginal vault. If the opening is accessible, the posterior vaginal cul-de-sac is the most convenient avenue by which to reach the tear, unless the abdomen is about to be opened, as in my case of ovarian tumor. If, however, the perineum and vagina are rigid and contracted, and the rent awkward to reach, it would be wiser to made an abdominal incision and sew it up in that way through the superior strait; in either case the operator must be skillful in sewing at a distance with long instruments. It is of the utmost importance that the sutures should be well placed, penetrating the thick coats of the bowel as far as the mucosa and securing accurate apposition. After such an operation the patient ought, as a rule, to receive no other food than albumin water for from five to seven days. The anal orifice should be thoroughly dilated, and if a rectal tube is tolerated it will serve to carry off gases and keep the parts at rest.

In order to avoid such injuries in the future, I would suggest that the rectal examination be made with the utmost gentleness, constantly bearing in mind the possibility of a rupture of the bowel, especially in stout elderly women. It is well to empty the bowel before the examination, and if the patient is then placed in the knee-breast posture and a speculum introduced, so as to secure a maximum air distension, on returning her to the dorsal position the rectum will be found expanded and holding a much wider and closer relation to the structures in the posterior pelvis.

An important point, not sufficiently emphasized, is that the examiner should avoid the natural impulse to invaginate the wall of the rectal ampulla on the end of the finger, pushing it to a point higher up in the pelvis. This error will not occur if, after introducing the finger into the ampulla, the next step made is that of seeking out the so-called "third sphincter"—that is to say, the rectal valves behind the cervix. The finger ought to be introduced between these distinct anatomic structures and then up into the pelvis, where the bowel lies in its natural relation in contact with the posterior surface of the uterus and the left broad ligament.

It is important, too, that the wrist and the fingers should be at ease and flexible during the examination. If the whole arm is made rigid in the effort to push in the perineum in order to gain a few centimeters in finger length, the hand also is apt to become rigid and the tactile sense impaired, and the movements less under control. I avoid this rigidity of the arm by resting my elbow against my hip and pushing the arm in from the hip and so setting it at ease. I trust this brief presentation of these few cases will serve the more important purpose of eliciting the experiences of many of the gynecologists who are here, as I feel sure an important new chapter will be written concerning the injuries produced in the course of gynecologic examinations when all the facts are known.

DISCUSSION.

Dr. Thomas S. Cullen, Baltimore, mentioned two cases of injury to abdominal structures resulting from a vaginal examination. In one case there was a myomatous uterus, two of the nodules were sessile and one pedunculated. On opening the abdomen, after several students had examined the patient, he found about 200 c.c. of free blood in the abdomen. The pedunculated myoma had been partially torn from its uterine attachment and there was free oozing. Such an accident is liable to happen even when the utmost care is used. The slightest traction during operation is liable to partially separate a myoma from the uterus. As the abdomen was opened immediately after the examination the slight hemorrhage was of little consequence. Had there been merely an ether examination without operation the bleeding might in a short time have produced alarming symptoms or possibly have occasioned death. Several years ago Dr. J. W. Williams told Dr. Cullen of a case in which he made a vaginal examination and found pus tubes. Four or five hours afterward the temperature rose to 105 F. and the pulse became rapid. On opening the abdomen he found that one of the pus tubes had collapsed. The pelvis was full of free pus and acute peritonitis had already commenced. After removal of the tubes the patient made an excellent recovery.

Dr. F. F. Lawrence, Columbus, Ohio, said that this paper emphasizes two points: first, that palpation, to be of value, must be light; second, to be other than that means great danger to the patient and great anxiety to the surgeon, not only in the cases mentioned, but in others. He has twice seen most disastrous results follow unnecessarily vigorous examination in strangulated hernia. In one case the manipulation resulted in perforation of the bowel above the neck of the sac intraperitoneally, with the escape of a large amount of the intestinal contents into the free peritoneal cavity. The result was fatal. Dr. Lawrence recently saw a case of extrauterine pregnancy in which an unruptured tubal pregnancy was diagnosed. A relative of the patient was anxious to satisfy himself that an operation was justified and made a rather vigorous examination. In two hours the pulse went up to 140. The abdomen was found to be full of blood, and only the most vigorous efforts saved the patient's life. Injury to tissues other than the rectum are also to be considered. A rectal examination must be made even more delicately than a vaginal examination.

DR. GEORGE ERETY SHOEMAKER, Philadelphia, said that he could add one case of rupture of an appendiceal abscess by the hydrostatic pressure of an enema. The woman was in collapse when he arrived. Her physician had attempted to move the bowels. The nurse had placed the bag at least four feet above the level of the patient. The patient gave a sudden outcry and went almost immediately into collapse. Her condition being absolutely hopeless, he declined to operate. No postmortem was allowed, but undoubtedly the pelvis was full of pus because of rupture of the abscess into the peritoneal cavity.

DR. H. G. WETHERILL, Denver, said that there is another way in which injuries to the rectum may occur, incident to obstetric operations: as the head is descending and receding rather rapidly, he has seen the second finger thrust into the rectum and recession prevented in that way. This is a practice which should not be sanctioned under ordinary circumstances, not only on account of the risk of injury to the rectum, but because of the danger of infection.

DR. CHARLES P. NOBLE, Philadelphia, reported a case of rupture of a cyst of a graafian follicle on the examining table. This was followed by syncope, but no other ill results. He has had a number of similar cases, both in the office and in the operating room. The only serious case occurred in his clinic recently. The diagnosis was in question, whether a suppurating ovarian tumor, or a tumor, plus a pelvic abscess. One of the assistants, a very competent and careful man, made an examination and ruptured the abscess, a very serious situation, as the patient was profoundly prostrated at the time. Immediate celiotomy was performed with a fatal result.

DR. SAMUEL M. BRICKNER, New York City, asked Dr. Kelly whether he obtains as good results from a rectal examination by placing the patient in the dorsal position, after first placing her in the knee-chest position, as on the side. Dr. Brickner also has had a case of ruptured graafian follicle cyst. He examined by vagina and found a very small cyst. He asked one of his assistants to examine her. The young woman had been married recently and there were a number of raw edges on the vagina which were painful, so he asked him to examine by the rectum, which he did. He made hard pressure over the abdomen, but said that he could not feel the tumor. Dr. Brickner examined, but failed to find it again. She had severe pain in the abdomen, so he operated at once and found that the cyst had been ruptured. The patient recovered.

DR. H. A. KELLY said that the treatment of such an injury is an important matter. A patient in one of our inland towns who had a rent in the rectum caused by a proctoscope died. The best plan is to open the posterior cul-de-sac, sew up the rent and put a small drain into the peritoneum. If the physician is about to perform an intra-abdominal operation at once the wound may be closed through the superior strait and then drained below, but in all cases it is well to put in a drain.

THE TREATMENT OF OTITIC SEPTICEMIA.*

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The distinction which has been made between perforative and non-perforative inflammation of the middle ear or between its purulent and its catarrhal form is usually well grounded, and coincides with the differences of septic or non-septic involvement. Like all rules, however, this has its exceptions, and cases lacking all evidence of purulency can go on to the most serious results in a way that justifies us in urging that every case of middle ear inflammation shall at first be dealt with as though the outlook was serious in the extreme. Several of the most important deaths which have occurred in my experience have been in cases where tympanic symptoms were moderate, trivial or even apparently absent, yet meningitis or intracranial purulency developed with fatal results. This question, therefore, of the septic character of a tympanic involvement must at times be inferred, in spite of the symptoms, rather than by their aid, and in all cases there is reason that we should adopt, beside the local treatment, general measures looking to a forestalling of such dire possibilities.

GENERAL TREATMENT.

Rest in bed, with protection by compress and bandage of the whole aural region, bloodletting, purgatives, restricted diet, and heat or cold externally, are generally insisted on, and their value is well known to all who have employed them. In spite of all these and the free drainage by incision of the suspicious drumhead and of the edematous upper back wall of the canal—"internal Wilde's incision," which has rationally displaced almost entirely the older cut through the mastoid periosteum—we may have vague yet disquieting symptoms of variable fever, pain, headache, nausea, and possibly twitchings verging on convulsions. Of course, it is easy to be radical, and, if permitted, to chisel the mastoid and even explore the intracranial cavity or the cerebrum itself; but the rational demands for this are often lacking. The conservative man can not feel justified in urging this against opposition, especially if he has employed it vainly in a previous series of cases, in which the absence of findings to justify the exploration has left him of the opinion that recovery, if achieved, has been in spite of his intervention rather than because of it.

The absence of localizing symptoms may be such as to leave the steps of intervention utterly indeterminate. Evidence of sepsis may be present in the steepled temperature-chart, and yet the signs of even phlebitis of the jugular or lateral sinus may be lacking, or the irritative symptoms of meningeal involvement may leave us in doubt as to whether anything more than irritation is present. In such cases radical intervention will not always be accepted, even if the aural surgeon feels impelled to offer it. It is here that we may still hope for benefit from medicinal means, and mercurials, saline and sweatings may do much to eliminate the toxic materials from the system and to prevent the occurrence of the serious lesions which threaten.

Hypodermoclysis.—In addition to these, the latter days have given us great help in the employment of hypodermoclysis or enteroclysis. The value of the first of these is too well assured to need much urging, especially with any one who has employed it. Yet those who have not employed it will look with some hesitation to its demand for strict asepsis, and will regard it as a surgical procedure which few physicians, fewer trained nurses and no others can possibly undertake, while patients or friends will refuse it on the score of its painfulness and its unknown possibilities of evil. Yet it should be feasible to sterilize a fountain syringe by boiling and a large hypodermic needle by alcohol and to boil the water and its due proportion of salt, permitting the giving of such injections at any bedside without risk and with minimum trouble.

Enteroclysis.—The enteroclysis, on the other hand, is a familiar matter to every household, and will be readily accepted in many cases where the other might be absolutely rejected. Its value may be less, as its action is certainly slower and less striking; but it is so

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easy of performance that the patient will rarely make the least objection, and it can be repeated with most gratifying results again and again in cases where the occurrence of high fever has marked some complication, but study fails to indicate the seat of the trouble. It has seemed fair to assume in such instances that the condition is as yet a mere toxemia, whether by absorption from the ear, the intestines or some other part; and vigorous use of the high saline enema has been followed by prompt fall of temperature and disappearance of all disquieting symptoms.

Lumbar Puncture.—In the severer cases where meningitic symptoms are present but without localization, and operative opening of the skull seems premature and haphazard from lack of localizing indications, there is great aid to be gained from lumbar puncture. This does not mean that the milder measures with free catharsis and all medicinal aids should be neglected. These should be freely employed; but in addition to these puncture of the lumbar canal, if done with fair anatomic knowledge and a clean needle, should be harmless, yet frequently valuable. This value is not merely in the diagnostic aid afforded by the study of the fluid drawn off—its therapeutic value is equally great, although often overlooked. Marked convulsive attacks may cease wholly under its relief of tension, stupor and other evidences of brain pressure may lighten and pass away, and the main credit for the gain will properly belong, in many of the cases, to the lumbar puncture. Its real therapeutic rather than merely diagnostic value points to its repeated employment, many times a day if urgent symptoms demand; and it is this rather than other points as to its use on which I feel that I can insist. The antitoxic effect of quinia, permanganate of potash and other drugs is probable but not proved; and the antistreptococcic serum seems to work in other hands, if we may believe reports, but it is apt to prove barren in our own hands.

Glycogen, either by the mouth or hypodermically, has claims made for it equal to those which can be urged for the most potent remedies, but it remains to be proven how often it will equal or approach such expectations. It has seemed valuable in my hands, and I can commend its further employment.

CONCLUSION.

I especially wish to urge the frequent and full employment of enteroclysis in these cases of otitic toxemia as a remedy potent and general in its effect, while almost ridiculously simple in its employment. The temperature may be warm, medium or cold, as the inclination or condition of the patient dictates. The amount must vary from two or three ounces in the infant to a pint in some adults, in accordance with the capacity of the bowel. The introduction must be slow with slight pressure—a foot of elevation of the reservoir is enough—and the perineum may need to be supported for many minutes after the withdrawal of the tube if retention is to be secured. Even if much of the fluid is lost, its flushing of the lower intestinal tract is of great importance, and the amount of absorption is generally greater than might appear. Quinia and other medicaments may be added to it, or the nutritive materials if other means of feeding are unsatisfactory. But with all this simplicity, it is probably as efficacious as most of our possible interventions; and in the vague, indeterminate cases, where surgery must wait for clearer indications, it may often forestall serious complications and prove the means, not brilliant but real, of saving life.

PLASTIC OPERATIONS FOR THE CLOSURE OF POSTAURAL OPENINGS FOLLOWING RADICAL AND MASTOID OPERATIONS.*

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It occasionally happens that after either a simple mastoid operation or after the radical operation for the relief of chronic suppurative otitis media, that an opening of considerable size remains behind the ear. Some operators advocate that such an opening be left in the majority of cases of radical operation for the the relief of chronic suppurative otitis media, in order that all parts of the middle ear may be freely open to inspection. As the radical operation is now performed, however, most surgeons prefer to close the posterior wound completely, and to secure all subsequent drainage through a sufficiently patent external meatus. It also occasionally happens that a permanent opening remains behind the ear in cases operated on for acute mastoiditis. This occurs only in those cases where the destruction of bone has been very extensive, and usually where, after the operation, large sequestra have been exfoliated. When these openings occur, either by accident or design, the surgeon is frequently called on at a subsequent period to operate for the relief of the deformity.

Quite a number of cases of this character have presented themselves to me for operation. As no two cases exactly resemble each other, it is almost impossible to lay down any definite line of procedure which is applicable to every case.

The simplest procedure is that of Trautmann, who advises circumscribing the entire fistula by means of an incision through the soft parts. The integument is then dissected up along this circular line of incision on all sides, so as to form two semicircular flaps which are folded inward into the opening. The raw edges of these flaps come together, the cutaneous surfaces of the flaps meeting in the external auditory canal. The raw edges of the flaps are united by means of fine catgut sutures. Occasionally silk sutures are used, and in this event they are introduced so that the knots will lie in the lumen of the meatus. This procedure closes the opening, and the next step is to undermine the skin for a considerable distance, starting from the margins of the circular incision. The skin being undermined in every direction, this circular incision is completely closed by means of sutures, and is thus converted into a linear wound. The posterior opening is thus entirely obliterated.

This procedure answers very well for openings of small size. For the larger openings, however, the Mosetig-Moerhof operation is the one ordinarily chosen. In this operation the margins of the opening are freshened, and the anterior and posterior margins of the wound split into two flaps, the lower or interior flap having its cutaneous surface directed inward toward the meatus, while the outer or external flap has its cutaneous surface presenting outward. A tongue-shaped flap is then dissected up from the skin of the neck, sufficient in size to completely fill the posterior opening. This flap is dissected from below upward, its pedicle representing the lower margin of the opening it is desired to close. This tongue of skin is then folded upward

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on itself and secured to the internal flap made by splitting the margins of the opening, by means of fine catgut sutures. The skin is then extensively undermined along the lines of incision made in cutting the tongue-shaped flap, and also along the lines of the original opening, the anterior and posterior margins of which were split. This undermining of the skin enables the surgeon to completely cover and bury the tongue-shaped flap which is fitted into the posterior opening, and to convert the entire wound into a linear wound, easily closed by interrupted sutures. Both these procedures are simple enough in a typical case. Unfortunately, these cases are, as before stated, atypical.

In a case that came under my observation a large permanent opening had been left after a radical operation had been performed. The result of this operation had not been entirely satisfactory, as there was still some offensive discharge from the middle ear. I was called on to relieve the suppuration which still remained in the tympanic cavity, and also to close the posterior opening so as to remove the unsightly deformity. The case was operated on twice, the first operation having for its purpose the relief of the suppuration. I simply repeated the radical operation already performed, removing what carious bone remained, and lining the entire tympanic cavity by means of skin grafts.

Ten days after this operation I closed the fistula in the following manner: The external auditory meatus had been much contracted as the result of the first radical operation. This was, therefore, enlarged in the usual manner, by cutting a large, tongue-shaped flap from the concha, dissecting out the cartilage, turning the tongue of integument secured from the concha upward and backward into the posterior opening, and securing it in place by sutures. An incision was then made from the upper margin of the posterior opening, just behind the line of auricular attachment. This incision extended down to the periosteum, but not through it. The integument was then dissected up from the underlying soft tissues, forward over the posterior surface of the auricle and backward over the skull for a considerable distance, throughout the entire extent of the opening which it was desired to close. The margins of this opening were then pared so as to present a raw surface. From the lower border of the original postaural fistula two slightly divergent incisions were made down the neck, mapping out a tongue-shaped flap of sufficient size to be folded upward, and to completely fill the opening behind the ear. The pedicle of this flap was placed at the lower margin of the opening which it was to close; the flap was turned upward into the wound, and held in position by catgut sutures. Anteriorly, this flap was attached to the tegumentary tongue, which had been turned backward into the wound from the concha. Posteriorly, the flap was attached to the periosteum, which had been dissected up from the superficial portion of the bony cavity of the mastoid. After this flap had been secured in position, the margins of the wound in the neck, left after dissecting up the tongue-shaped flap, were undermined, both anteriorly and posteriorly. It was then found possible to draw the soft structures together so as to completely close the wound, and to bury the tongue-shaped flap which had been inserted into the opening behind the ear. The raw surface of this flap, therefore, lay in contact with the raw surface made by drawing the tegumentary edges of the wound together, while the cutaneous surface of the tongue-shaped flap formed a portion of the lining of the external auditory meatus. The wound healed throughout by first intention, and the result was perfect.

In a second case, in which a radical operation had been done, together with excision of the internal jugular vein and exploration of the cerebellum, I was able to close the large opening without taking the tongue-shaped flap from the neck. This case presented many difficulties, as the original wound had healed by granulation, and over the region where the cerebellum had been exposed, the resulting cicatricial tissue was very thin. The external auditory meatus was first enlarged by a plastic operation, performed in the usual way, a tongue-shaped flap being cut from the auricle, the cartilage being dissected out and the flap turned upward and backward so as to enlarge the meatus. An incision was then made upward from the upper margin of the opening which I desired to close, for a distance of about an inch in the line of auricular attachment. A similar incision was made in the line of auricular attachment downward from the lower margin of this opening. The anterior margin of the opening was then freshened by means of scalpel and scissors, and the integument dissected up from the posterior surface of the auricle. This undermining of the integument was also continued anteriorly throughout the extent of the two incisions first described. An incision was now made about the posterior margin of the opening. Great care was necessary in making this incision in order to avoid opening the dura. The dura was avoided by making the incision well inside of the opening, so that the knife came in contact with the bony wall. By means of a periosteum elevator and with the scalpel, the soft structures surrounding this opening posteriorly were dissected up. Of course, they could not be undermined for any distance backward for fear of opening the dura. By careful dissection, however, I was able to get a short flap of cicatricial tissue. The anterior flap had been so thoroughly undermined that it could be sutured to this short posterior flap without any tension, thus closing completely the posterior opening. The result, in this case, was excellent; the wound healed perfectly by primary union, and there is now scarcely any scar.

It is worth while to remember, in speaking of these plastic operations, that when the skin covering the posterior surface of the auricle is undermined, it can be pulled backward for a considerable distance. I have been surprised, in all of these cases, at the amount of skin that could be obtained from the posterior surface of the auricle. In this last case, no one who saw the operation believed that primary union would occur on account of the cicatricial character of the tissue of the posterior flap; there was not even a stitch abscess, however.

In another case a large permanent opening was left after an ordinary mastoid operation. The greater portion of the posterior wall of the external auditory meatus had been removed at the time of operation, and the drum membrane could be seen in position through the large posterior opening. In this case I simply circumscribed the opening by an incision through the soft parts. With a small periosteum elevator, the lining of the bony cavity was carefully dissected up, above, behind and below. The tissue was very thin, but fairly well nourished. This lining of the bony cavity was then gently lifted out, carried forward and attached to the freshened margins of the meatus. The skin of the posterior surface of the auricle was undermined and the skin adjacent to the posterior margin of the wound

was treated in the same way. The wound was then completely closed by sutures. The result in this case was entirely satisfactory, the wound healing by first intention throughout.

In still another instance a small fistula remained behind the ear after a radical operation, and suppuration from the tympanum had not been entirely relieved by the previous procedure. The discharge seemed to come from a small spot in the region of the eustachian tube where cicatrization had been imperfect. In this case, prior to closing the posterior opening, I curetted out the deepest part of the tympanic cavity through the enlarged external auditory meatus, but found very little softened bone. I therefore inserted a skin graft over the area which had been denuded by the sharp spoon, and held it in place by cotton pledgets. The posterior opening was then closed by undermining the skin in front and behind the fistula after the edges of this had been thoroughly freshened. The wound behind the ear was closed by mattress sutures, so as to bring large raw surfaces in contact. The healing was by first intention, and the discharge from the ear absolutely cured.

I would also call attention to the fact that in cases of a large permanent posterior opening, following either the radical or the mastoid operation, the normal entrance to the meatus usually becomes very much contracted. In one case recently seen, the fibrous canal was absolutely obliterated by cicatricial tissue. In these cases it is necessary to enlarge the meatus considerably by means of a plastic operation—the one which I prefer being that usually employed in the performance of the radical operation—that is, the cutting of a tongue-shaped flap from the concha, dissecting out the cartilage and turning the tegumentary conchal flap upward and backward on itself, so as to secure a very patent meatal orifice. Where the formation of this flap leaves a raw conchal margin of any extent, healing is much facilitated and subsequent contraction of the meatus hindered by covering the cut margin with a Thiersch graft. Even where a very large meatus has been formed at the time of operation, the subsequent cicatricial contraction will narrow this considerably. It is always well, therefore, to make the meatus very patent at first, in order to allow for this subsequent contraction.

CONCLUSIONS.

It is always difficult to describe a plastic operation, and I am afraid that the descriptions in the above cases have not been very clear. Cases which apply for relief of such conditions as those above described are frequently met with in a large operative practice, and I have reported the cases in detail because for some time I was rather skeptical as to the advisability of attempting to close these openings, and was uncertain as to what the results would be. The outcome, however, in these cases has been so satisfactory that I think the surgeon should always urge operative interference for the relief of these deformities, as the results obtained seem almost invariably to be satisfactory. In only two instances, one of which is reported above, have I been obliged to use the tongue-shaped flap from the neck. In all the other cases the opening behind the ear was satisfactorily closed by dissecting up the skin from the posterior surface of the auricle. As the operation is much simpler where the tongue-shaped flap is not used, and can be performed much more rapidly, this procedure should always be preferred to the more extensive one.

DISCUSSION

ON PAPERS OF DRS. RANDALL AND DENCH.

Dr. Norval H. Pierce, Chicago—We must always remember that, no matter what general treatment we pursue, the object aimed at is the evacuation of the toxic foci about the ear. It is true that in cases which we see almost constantly there is great difficulty in differentiating between toxemia, septicemia and pyemia. If we were able to differentiate between septicemia and pyemia in aural disease it would be of great aid to us in operation, because in the majority of instances pyemia is the accompaniment of thrombosis of the larger blood vessels. There is not very much doubt that pyemia can occur from thrombosis of the veins within the mastoid process itself. There is postmortem evidence of this fact, and it is in these cases that we can do most in external medication, and it occurs mostly in children whose bones are highly vascular. I am sure Dr. Randall would never advise in any case where there is fever and other accompaniments of pyemia, to rest entirely on external medication; it is at the beginning of this process that you have the best chance. As to lumbar puncture, if Dr. Randall meant to say that his canula remains in the spinal canal for an hour, the spinal fluid must run very slowly in Philadelphia. It does very little good in septic meningitis, but is followed by brilliant results in serous meningitis, but that is not a septic condition *per se*. Whenever we get pus in the spinal fluid by puncture, it is a strong contraindication to operation. When mercurials help, it is not because of relief of the local symptoms, but because the intestinal canal is relieved of its toxic contents. Antistreptococcic serum in my hands has invariably been followed by disappointment. I have never seen a case followed by good results in any way. In the winter of 1902 I subjected ten cases of mastoid inflammation in the very first stage to high saline injections. This was retained and the method given a thorough test. All these came to operation except one. Pus was found on operation, and this method abandoned. Dr. Dench has been very fortunate in having his patients recover so nicely. I have had cases where I found postauricular openings a year afterward. It is a question which cases should be closed and which should not.

Dr. S. MacCuen Smith, Philadelphia—Our idea in the early operation is to prevent septicemia, which is more important than treatment by any method. Last December I presented a paper before the Aural Section of the Academy of Medicine of New York City, in which I reported two cases of metastatic abscess of the liver following suppurative disease of the middle ear. In these cases the Austrisch serum was of no use at all. I believe that those of us in the past who have waited for the external classical symptoms before operation were justified; but in recent years, since the advent of epidemics of grippe, those who wait for the classical symptoms before opening the mastoid will lose many of their patients. When acute otitis media continues for some days with a discharge, and especially if there is swelling over the posterior and superior wall, and these symptoms do not rapidly improve, the only rational procedure is the mastoid operation. In more than sixty cases operated on in a period of about thirty days, in not one was the diagnosis wrong. Some of the cases with the least symptoms showed the greatest amount of decay of the mastoid.

Dr. W. Sohier Bryant, New York City—I think lumbar puncture is used altogether too seldom in these cases.

Dr. D. McAuliffe, New York City—This class of cases was alluded to some years ago by Koenig, and his views were disputed by Jansen. They are too rarely looked for where a thrombosis is not suspected. In the last few months I have had two cases of this type of pyemia. One had symptoms of meningitis at the first visit and was put on the table pulseless; I punctured the cerebrum and cerebellum, but found no pus. I saw nothing to indicate meningitis, but found fluid in the lateral sinus and the jugular collapsed. This was practically a moribund collapse, but that was the only thing to prove a jugular bulb thrombosis. The patient died. Another case developed temperature and showed symptoms of sinus thrombosis,

but exploration gave no evidence. This patient also developed pyemia and died. In these cases I think the infection was carried to the jugular bulb.

DR. H. O. REIK, Baltimore—When we more commonly employ the proper measures for carefully studying the pathologic condition of the blood we shall probably classify these cases better and succeed in reducing the mortality. Careful and frequent blood counts and bacteriologic investigations will help us very materially. I am very sorry to hear the antistreptococcic serum so strongly condemned, and that without a word of reservation. I remember that Dr. Welch of the Johns Hopkins University, in the early days of these serums, called attention to the fact that we used the word streptococcus too broadly, and that it really covered not one but a variety of organisms. The serum from any one of these streptococci may counteract the effect of that organism, but not the effect of other streptococci, and so, if we can succeed in distinctly classifying the varieties of this organism, we may hope that in the future we may secure an antitoxin for each, if not one of a general form. In the line of treatment, and as having some bearing on the question of hypodermoclysis, I wish to mention briefly some work which has been recently done in Baltimore. A furor was created a year or two ago by the reports of the employment of formalin intravenously in septicemia, and know that the further use of it was not very encouraging. Dr. Joseph Hume of Baltimore was at that time experimenting in the same line with nitrate of silver. His first case was one of general septicemia following an operation for appendicitis, and after the case had been abandoned as hopeless he succeeded in saving the patient's life by the intravenous injections of silver nitrate, using it, I believe, in the strength of 1/5,000 and injecting from 300 to 700 c.c. at a time. His work has not yet been published, but I know of a number of cases in which he has used it with excellent results. This is still in the experimental stage, and its dangers are fully recognized, but his work is very encouraging.

DR. G. L. RICHARDS, Fall River, Mass.—We sometimes get a little too radical. Now and then we may possibly reinfect a case and intensify the danger of a fatal result. A certain degree of surgical conservatism may be proper at times. I do not think Dr. McAuliffe's first case was helped by the very extensive operation he did.

DR. J. A. STUCKY, Lexington, Ky.—In what class of cases are we justified in doing exploration? I would like to emphasize the importance of early operation in doubtful cases.

DR. G. HUDSON MAKUEN, Philadelphia—I would like to report a case of deformity in which there had been no mastoid operation, a deformity of the external auditory canal. The posterior walls of both canals and the auricles have fallen downward and forward so that, instead of canals, there are only slight slits on either side. The deafness, I think, was due in part to this collapse of the walls. During conversation the man takes hold of the auricle and pulls it upward and outward, and thus increases his hearing powers. Has any operation been devised for the relief of this condition? The man is 45 years old.

DR. E. B. DENCH, New York City—We all meet cases of otitic pyemia, and any contribution from a man like Dr. Randall is of great value. There seems to be one point to which the discussion leads: Let us not have aural suppuration to treat, but let us eliminate it. More and more do I find my views becoming radical in this direction. An ear which is the seat of chronic suppuration is as dangerous as an appendix which is the subject of recurrent attacks. Unless there is some contraindication, I would advise that all chronic suppurating ears be treated by radical operation to prevent later septic developments, which may be insidious, as in the case reported. I think most of you will bear me out in the statement that, with an acute inflammation of the middle ear, when seen early, we seldom get systemic infection. What we must do in order to cut these cases out is to treat cases of chronic suppuration by radical operation during the interval period. I have never used saline injections, but for a short period they may be of value in stimulating the heart and flushing the kidneys. The dural cavity should be washed out, just as the peritoneal cavity is washed out. But no method of that kind will enable us to treat septic meningitis. I do not regard lumbar puncture as of any value in purulent meningitis.

DR. J. HOLINGER, Chicago—Accurate indications are most important for surgical procedures. The tendency in otology at present is to operate too much. In operating we destroy the cellular structure of the mastoid process, and whether that has no influence on the hearing is a question about which I want to see some carefully prepared statistics extending over many years before I consider it settled. Four patients were in my care a short time ago on whom immediate operation was urged by well-known colleagues, yet every one was cured by from three to ten treatments without operation. As to the question whether or not to close the retro-auricular opening in radical operations, I have one experience which teaches me that we can not make rules which apply to all cases. A boy had to be operated on a second time because in one cell which was too far back to be reached from the meatus, cholesteatomatous material had gathered; had there been a retro-auricular opening this would not have occurred.

DR. R. C. MYLES, New York City—The percentage of cases in which operation is indicated has not been determined, and it is generally admitted that in every ten cases nine did not require operation, but the tenth needed it so badly that it was better to operate on the other nine rather than to have missed the tenth. In any given case operation may be refused, brain abscess results and the patient dies. On the other hand, it must be admitted that many of the cases operated on will end fatally. Accidents must, therefore, always be taken into consideration. These are the two sides of the question, and what we now desire is the statistics of the cases in which operation is indicated—what percentage come to operation and what proportion get well without it.

DR. A. B. RANDALL—I would warn the gentlemen listening to the results obtained by a skillful operator that they must not expect to obtain equal results often. A man sometimes does his work too well, if he makes success seem too easy. The matter of closing these posterior wounds is of the utmost difficulty and extreme care must be used. I am sorry that the cerebrospinal fluid moves so slowly in Philadelphia, but where I have used lumbar puncture in serous meningitis I have continued it so long as I could get drippings of the fluid. Just as in brain abscess, it makes a difference if we spend even an hour in evacuating the fluid from the cranium. This little irrigating spatula is used in that class of cases needing heroic help, where there is pus in the fluid when drawn by lumbar puncture. The only thing, then, to be done is free irrigation by opening the cranial cavity and the dura and thus giving them the only chance they have for life. As to the lungs, I did not think it was necessary to say to this Section that they must retain their medical perceptions and training. Dr. William F. Norris, in the days of my training, used to make us look at the medical aspect of every case when we were studying eyes. I constantly have cases referred to me for operation where with suppuration of the ear, symptoms point to deeper trouble. Recently a child brought after the mastoid trouble had healed, with mild meningitic symptoms, following a reduction of his renewed suppuration, showed only a manifest pneumonia of one lung, with empyema following. As the genuine Credé salve sometimes has a heavy coat of mold on it when imported, I have hesitated to use it. To those of you who are acquainted with my hospital work when I send a patient in and ask that he be ready for operation in thirty minutes, the expectation that I wait long for an operation will seem rather surprising. I pass in Philadelphia as rather a bloodthirsty man, not being very hard on the trigger as to operation when I see the necessity for it, or think there is greater danger in waiting than in going ahead. Where the patient is well studied as to blood count, condition of the lungs and every medical aspect, with evidence of a toxic condition, intestinal perhaps, yet not clear, we must do something to relieve while awaiting developments as to what and where any intervention is to be done. It is under such circumstances that I urge the value of saline injections and at times lumbar puncture.

Dr. E. B. Dench—Replying to Dr. Makuen's question, I do not know that any operation has been devised for correcting a sinking posterior wall, but such an operation would seem very easy. Operation on a drooping ear has frequently been done, and a modification of that could be devised that would lead to a patulous canal, and I would advise it. It would not injure the drum membrane. In the matter of closing these posterior openings, I always have the external canal sufficiently open so that I can inspect the entire interior, and the patient is in no danger whatever from absorption of the products.

THE PALLIATIVE TREATMENT OF ACUTE MASTOIDITIS AND ITS LIMITATIONS.*

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BOSTON.

The appropriate treatment for the inflamed mastoid is a vexed question, occupying much the same position with reference to otology at the present time that the treatment of the inflamed appendix held in abdominal surgery a few years ago.

Aurists differ but little as to the treatment of the acute abscess formation in the middle ear, but when it becomes apparent that the mastoid process is involved the greatest diversity of opinion exists as to the method of procedure which shall be employed.

A few years ago conservatism in the treatment of mastoiditis was absolute, and the operation of perforating the cortex rare. During the past decade great changes have taken place in our attitude toward this disease, until to-day the tendency is almost toward the opposite extreme.

I am well aware that much has been written of recent years on the subject of treatment of acute mastoiditis versus operation, still the presentation of actual results must always be of value.

The present paper embodies conclusions obtained from a study of 50 consecutive cases taken from hospital record during a period extending over six months, and sufficiently remote to insure against the possibility of subsequent relapse and operation on the cases reported as cured by treatment.

Although these cases were taken in order of sequence, none was considered where the conditions were such that immediate operation was performed, nor, on the other hand, were there any simple acute inflammations of the middle ear without mastoid complication, as all were admitted to the hospital with the distinct diagnosis of acute mastoiditis.

Immediately on entering the hospital free incision of the drum was made in all cases where there was not already a sufficiently good opening. This was usually carried out under the influence of a general anesthetic, nitrous oxid gas being preferred. Rest in bed for the first day or so, the continuous use of the Leiter coil, cleansing of the auditory canal and attention to the alimentary tract comprised the treatment following the paracentesis.

Of the cases subjected to this treatment, 30 resulted in recovery with disappearance of mastoid symptoms; 17 came to operation during the stay in the hospital, and 3 patients who were discharged apparently relieved subsequently returned for operation.

Inquiry showed that three cases had had previous attacks of acute suppuration; the aural history in the other cases was negative. The duration of the acute inflammation previous to admission to the hospital varied from one day to one month, the average length of time being about six days. All but six of the cases had discharge from the ear on entering, either from spontaneous perforation or following paracentesis. Three of the six patients with intact drums came to mastoid operation.

Mastoid tenderness in some degree was present in all but three of the cases. Some were very tender throughout the whole mastoid, while some exhibited simply localized tenderness on very firm pressure over the antrum or tip of the process. Swelling and edema of the canal wall was noticed in 19 of the 50 cases, and was followed by operation in 10.

The average length of time the continuous cold coil was worn was slightly over forty-eight hours, the shortest period being twelve hours and the longest seventy-two hours.

The chief factors taken into account in deciding to operate were a continuance of purulent discharge from the ear, with tenderness or swelling, or both, of the mastoid tissues, lasting for some days in spite of the treatment.

In several of the cases where there was persistent tenderness of the mastoid the appearance of a slight swelling in the canal was the signal for operation, and in one case there was apparently a slight beginning facial paralysis at the time of intervention.

Acute purulent infection of the bone was found in all the cases on which operation was performed, accompanied by granulation formation, and generally by softening of the bone. In four cases there was absorption of the inner table of the skull, with the purulent contents of the mastoid lying in contact with the lateral sinus, and in one there was an extradural abscess.

CASES WITHOUT MASTOID TENDERNESS.

It is interesting to note that of the three cases without mastoid tenderness two came to operation. One had had several attacks of earache with apparent recovery during the preceding three months. The drum was intact, red and bulging; there was no swelling of the canal, or over the mastoid, but there was intense pain. Paracentesis was followed by a week of relief, but at the end of that time there was a return of the pain, with swelling over the mastoid. Operation showed diseased bone, with extradural abscess from streptococcus infection. The other had an acute earache of only five days' duration. After nine days in the hospital the symptoms subsided and the patient went home. Three weeks later he returned with profuse discharge from the ear and slight edema over the mastoid. Operation showed extensive destruction of the cortex, large pneumatic cells filled with pus and granulations, and pus lying free on the surface of the lateral sinus.

The comparatively large number of recoveries (60 per cent.) following the treatment is also interesting. As contributing causes to this we must reckon, first, on the admission to the hospital at the earliest possible moment after establishing the diagnosis, although there were many cases which applied for relief after the disease was well established; in the second place, to the free tympanic drainage insisted on in all cases.

DRAINAGE THROUGH THE DRUM MEMBRANE.

Spontaneous perforation of the drum rarely furnishes an adequate opening for drainage, and often leads to a false sense of security, for many times examination shows that the discharge comes from a bulla which has

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ruptured, leaving the membranum tympani intact. This objection of insufficient opening also applies often to the small punctured wounds of the drum. The operation of incising the drum, although slight, is very painful, and unless performed under the influence of an anesthetic is necessarily hurried and more or less incomplete.

The method of providing for the escape of secretion from the ear following the evacuation of the tympanic cavity also merits attention. When the drum is opened early the discharge is largely serous and readily drains through an aseptic wick, which not only serves to perform this function, but also acts as a safeguard against the introduction of infective material through the external canal. It is only when the discharge becomes so thick that it will not readily pass through such a wick that syringing should be employed.

There is a noticeable absence of fatality in these cases, notwithstanding that five had penetration of pus to the surface of the dura. In none of these latter cases was there any particular elevation of temperature, nor did any of them have chills. The only indication of the seriousness of the process was the existence of unquestioned mastoid disease, continuing for days without improvement.

The presence of edema of the posterior canal wall is one of the best guides to the condition of affairs within the bone, even in the absence of mastoid tenderness. Patients who are apparently convalescing from an acute inflammation of the middle ear should be closely observed for the appearance of this sign. It is the one symptom which is in no way masked by the use of the ice coil, and as such is of the utmost importance.

THE USE OF THE LEITER COIL AND ICE-BAG.

Coming to the use of the coil, it would seem that we have in it an appliance of the greatest value in conjunction with other forms of treatment. In default of the coil, the ice-bag devised by Dr. Sprague has given good results, and is often better adapted to use in private practice.

Considerable difference of opinion exists as to the length of time during which cold applications may be made to the mastoid, and apparently no rule can be formulated that will fit all cases. The local tenderness of the bone may disappear within a few hours under the cold treatment, or it may exist for days, gradually diminishing. Persistence of mastoid tenderness, with a serous or mucous discharge from the canal, does not necessarily call for interference, as under such circumstances an expectant policy may be pursued with safety. With steady decrease in the amount of tenderness, and no swelling of the canal or severe pain, we may place reliance in the use of the coil for a period even longer than the maximum reported in these cases. The patient should be under competent supervision, however, so that the slightest change in the physical conditions may be detected immediately.

USE OF LEECHES.

One method of treatment formerly much in vogue consisted in the use of leeches, and without doubt they are of value in properly selected cases. With marked tenderness of the mastoid due to intense congestion of the bone, and where the inflammation has not yet advanced to the stage of pus formation, three or more leeches applied to the surface of the mastoid may afford almost immediate relief. Objections to their use are the uncleanliness of the method and the masking of the tenderness, as the leech bites may be sensitive for some days.

THE BEST TIME FOR SURGICAL INTERVENTION.

The question of the most appropriate time for surgical intervention is one in which experience must play a large part. Undoubtedly many of the cases which eventually recover when left to themselves contain pus, but this by no means should establish a precedent for allowing cases to go on without operation. Where tenderness of the mastoid exists for days, even in slight degree, with abundant purulent discharge from the ear, or where after once subsiding, the tenderness returns, operation is undoubtedly expedient, even if not absolutely necessary.

Under no circumstances should attempts at prevention of operation be continued where edema has already appeared in the region of the mastoid, as with this condition the amount of damage inside the bone may be merely conjectured, and surgical interference becomes imperative.

DISCUSSION.

DR. R. W. SEISS, Philadelphia—I think we often lose sight of a very important fact in mastoid disease. Every pathologist of note will agree that every case of sharply acute purulent middle ear disease is a case of mastoid disease. We know that most of them get well without difficulty under a little treatment. Out of 600 cases I have had 35 operations, and there were but 5 deaths. Two of those I operated on died; another was transferred to a colleague and died; two others were transferred to general surgeons. None of the patients not operated on died. I doubt very much if quite as many mastoid cases did not get well a century ago as recover under advanced modern surgery.

DR. E. B. DENCH, New York City—My house surgeon found out by investigations two years ago that about 90 per cent. of cases of staphylococcus infection got well without operation. I am sorry to register myself as a radical man, but I am more and more inclined to operate early in mastoid disease than I was in the early days. I believe suspicious cases do better if operated on. I have given up the use of ice, and do not think I shall use it again, for I have seen a number of cases in which the superficial tenderness improved and subsequently the cases came to operation, and I found very extensive involvement, such as extradural abscess, brain abscess, etc. It seems to me it is dangerous, because it masks the symptoms. I fully agree as to the importance of the symptom of the sinking of the canal wall; also that tenderness is misleading in many cases. It depends on the temperament of the patient. What does Dr. Hammond mean when he says the wick drain guards against infection of the secretion from without? It seems to me it would favor this.

DR. KASPAR PISCHEL, San Francisco—I am delighted to hear a man of Dr. Dench's experience speak against the ice-coil. Hot applications relieve the patient just as much without masking the symptoms. Besides, heat will help absorption if that is still possible, or hasten outward perforation if the mastoiditis is advanced beyond the possibility of absorption.

DR. G. L. RICHARDS, Fall River, Mass.—In the last two or three years the class of preparations consisting mainly of glycerin and clay have come up, and, if you take many of these mastoid cases and put on a thick covering of such a preparation and cover it with absorbent cotton, it will take up and remove a lot of the serum and it does not mask the symptoms. It will not take away the continuous pain, so it has advantages over the ice-coil. You can put one of these applications on in any family or tenement and leave it on for from twelve to twenty-four hours. Its use should be accompanied by a free incision of the drum membrane. I have had good results from their use, especially in the first stages. With reference to Dr. Dench's question about the wick, at the New Orleans session last year a paper was read on this subject. The wick is put in at the moment of the incision of the drum and maintained there until it shows signs of being purulent. It prevents the germs from entering because on the outside is a pledget of absorbent cotton, which is removed as often as it becomes moist.

Dr. S. H. Large, Cleveland, Ohio—I recently used the ice-coil on a patient with mastoiditis, accompanied by considerable pain. After twenty-four hours the pain had entirely disappeared, even pain on pressure, but forty-eight hours later he developed cerebral symptoms. The mastoid cells and antrum were opened and pus was found in large quantities. In this case the ice-bag certainly masked the symptoms and came near causing a fatal result to the patient.

Dr. C. H. Baker, Bay City, Mich.—Dr. Seiss mentioned one important point, namely, the fact that the mastoid is involved in every case of middle ear inflammation with extensive discharge; therefore, I think the statistics of recovery hinge not only on cases classed as mastoid but on cases of middle ear inflammation as well. The percentage of five deaths in 600 cases would be perhaps nearer the truth than five in thirty-five. The difficulty which most often prevents success consists in getting the patients and their families to consent to what we think is the right thing to be done. We can not always control them and are not allowed to do what we know is the proper thing, and must, therefore, resort to the measure which is next best. I have adopted hot irrigations in great quantities where I can not operate when I think the patient needs it. That means not the use of water a little warm, but water as hot as the skin will bear it and from two to four gallons of it. This is repeated every hour or two and has prevented a number of cases from coming to operation.

Dr. S. F. Snow, Syracuse, N. Y.—The limitations in acute mastoiditis are not always well marked, for in uncomplicated cases we can often give considerable latitude. We must be limited in conservatism when handling subacute or chronic cases because we can not then depend on free intercommunication from cell to cell. A point to be insisted on is free tympanic drainage if we are to rely on conservative methods. Free tympanic drainage is, to my mind, an all-important matter. I never feel safe in applying cold unless the drainage is free. I think the incision should begin at the bottom of the drum and go upward, cutting through to the bone, as the knife comes out along the superior wall of the external canal.

Dr. D. McAuliffe, New York City—I think the retrogression of symptoms in mastoid disease depends largely on the stenosis. If it extends long enough to allow the septic process to penetrate the cells the case is one for operation. The application of ice is known to diminish the temperature of bone at least five degrees. If maintained longer than twenty-four hours it diminishes tissue resistance. Where the condition began as catarrhal mastoiditis, the application of ice would have an important influence. We can not draw the line sharply between catarrhal and infected mastoiditis, and time is necessary for the development of bacterial infection.

Dr. Philip Hammond—I do not wish to appear as the champion of conservatism, and fully agree that the palliative treatment of acute mastoiditis is of no value where the disease has penetrated to the stellate cells of the mastoid. It seemed to me it would be of importance to tabulate a group of cases which were not selected, and I chose hospital cases for that purpose. Just how many cases were operated on during the time these cases were accumulating I do not know. More than 300 mastoid operations were done within three months' time. I believe that in many acute cases the patients die, though possibly I may be wrong in saying "many." I saw one within the past few months with acute suppuration of the middle ear of ten days' duration, with no mastoid tenderness, but with swelling of the canal and great pain, and just before I was called he passed into coma. In this case the cortex of the mastoid was tremendously thickened, and the only symptoms pointing to mastoid disease were the intense pain, and the edema of the canal. It seems to me this swelling of the canal wall should be recognized as early as possible and early operation advised. At the present time we are not taking cultures in all cases, but four or five years ago records were made of all acute cases, and the results bore out Dr. Dench's statement. Dr. Richards has ably answered the question as to the dangers and advantages of the wick in drainage. The results achieved at the infirmary are confirmatory of the value of this method. Some cases treated in this way healed without going on to suppuration. We use carbolized glycerin in the treatment of various affections of the external canal, but never to put in the wick for drainage purposes.

A CASE OF BILATERAL TUBERCULOSIS OF THE MIDDLE EAR IN AN INFANT.*

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ATLANTA, GA.

Whether the case here reported is one of primary or secondary tuberculosis of the middle ear must be left as an open question, just as it has been done in the few cases of this nature previously reported. In studying the history of this case, however, I feel just as warranted in calling it one of primary as I would one of secondary tuberculosis, chiefly on account of the age of the patient and the early manifestation of the middle ear trouble before any other physical signs of involvement.

The statement of Friedrich contains a great deal of truth when he says: "It is difficult, if not impossible, from the clinical point of view, to decide whether one has to deal with primary tuberculosis of the bone with secondary involvement of the tympanic cavity, or with the opposite condition."

Patient.—Baby C., 6 months old, was brought to me from a nearby town on Nov. 15, 1903, suffering with a discharge from both ears. The parents appeared healthy, this being their first child.

Family History.—The father's side gave an excellent family history, while that of the mother showed a tuberculous line of antecedents. A brother and sister had died of pulmonary tuberculosis, and a brother was at present afflicted with the same malady.

Present Illness.—The birth of the child was normal, and there was no trouble manifested until six weeks previously, when the left ear began to discharge. This was treated by the family physician without any result, and two weeks ago the right ear began to discharge. The little patient had also had considerable cough and apparently breathed through the nose with difficulty. There was absolutely no history of syphilis.

Examination.—Left ear: There is absolutely no swelling over the mastoid or around the ear. Considerable purulent discharge from the auditory meatus, and very offensive in odor. This was thoroughly cleansed away, when two-thirds of the canal was seen filled with granulation tissue, which bled freely if touched with any force. No necrosed bone could be felt, although there was every evidence of its existence. The canal was at no point swollen.

Right ear: Discharge slight but purulent. Very little odor. The same granulation tissue was encountered, but less in amount. No necrosis discoverable. The baby was exceedingly fretful.

The nasopharynx was explored with the finger, but very little adenoid tissue was found. No abnormality in the nasal cavities could be seen to account for the difficulty in breathing. There was slight signs of a facial paralysis on the left side. Temperature was normal. The baby nursed without difficulty, but slept only at intervals. While the patient was in my office some of the deep secretions and granulation tissue were taken by Dr. Claude Smith, pathologist, and the examination showed a large number of tubercle bacilli. An examination of the chest disclosed numerous râles indicative of a bronchitis.

Treatment and Result.—The treatment at the beginning was expectant and tentative. The canals were kept cleansed, and

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with the nasal punch forceps as much of the granulation tissue as possible was removed each day, followed with applications of guaiacol in alcohol. Syrup of the iodid of iron was administered internally, and the chest rubbed nightly with terebene in olive oil. Two days after the beginning of the treatment the patient seemed to rest easier at night and was less fretful. The discharge, however, did not cease, and the granulations seemed to sprout daily. On November 20, five days after the beginning of the treatment, the patient appeared brighter than usual and the facial paresis less marked. The next day, the weather being bad, the father reported that the baby appeared drowsy and that the eyes had a peculiar look.

On the following day, November 22, in consultation with two other physicians, the following condition was noted: No change in the objective appearances of the ears. The baby appeared drowsy and took absolutely no notice of anything around. Both eyes were turned in, and the pupils were contracted. No difficulty with the respiration, and the baby nursed from the mother as usual. The temperature was rather subnormal. There were no signs of a spasm. A radical operation was discussed, but considered inadvisable on account of the lack of any focal lesion, and the fact of an evident tubercular bronchitis. The baby gradually grew weaker and died four days later. The temperature never went above 101 F., and there were two spasms during the last hours, but limited to no portion of the body. Unfortunately, a postmortem could not be obtained.

This case presents many interesting features. The age of the patient and the bilateral involvement of the ears with the same clinical features was certainly a remarkable condition. Repeated examinations showed unmistakably the tuberculous nature of the process, and I do not think that we could differentiate the primary source of infection. To me the line of treatment most proper to pursue afforded the chief point of interest. I considered from the very beginning the question of a radical operation through the mastoid. On the other hand, this latter had never shown the slightest signs of involvement, which in infants is very easy of occurrence because of the anatomic structures. The operation was discussed with the parents, but they were unwilling to submit the baby to the same unless I could assure them of its success. They clung to the idea that it was only a discharge from the ear and would get well of itself. Such a promise as that I, of course, could not make, so adopted the next best plan, and that was to clean out the tympanic cavity as best I could through the auditory canal. This proved a failure, just as I had anticipated, and it only proved to me the futility of any such an operative procedure. Nor did I think that much could be accomplished by a radical operation, for the patient was evidently marked with disseminated tuberculosis.

I have been unable to find just such a similar case on record, and for this reason I feel that the detailed description of the above case is not without interest.

Quite a little has been written on tuberculosis of the middle ear, but nearly all of this has been confined to cases of adults who were at the time suffering most usually with the pulmonary form. Such patients, suffering with suppuration of the middle ear, would naturally be suspected of having a localized tubercular process of this organ. However, there is a marked lack of unanimity among otologists as to the frequency of this condition, due largely to the uncertainty of their methods of diagnosis.

One naturally supposes that a tubercular condition would be diagnosed by the presence of tubercle bacilli in the secretions or in the surrounding tissues, yet we find close observers like Bezold and Hegetschweiler who "depend on the macroscopic appearances of the clinical picture and neglect bacteriologic examinations."

It is a well-known fact that to find tubercle bacilli in a discharge from the middle ear it is always best to take some of the granulation tissue deep in from the focus of suppuration, and for this reason many observers have often failed to find tubercle bacilli because they have examined only the superficial secretions.

In looking up the literature on tuberculosis of the middle ear I find that there is a great difference of opinion both as to its frequency, its objective and subjective symptoms. For instance, Friedrich says: "It would appear that tuberculosis in the ear is usually secondary. The few cases so far recorded as primary are open to criticism, and for the present we have no proof of a primary tubercular osteomyelitis of the mastoid process."

Grimmer, in writing on this subject, says that probably 65 or 70 per cent. of cases of suppurative otitis media with neighboring bone lesion, in children under 5 years, are tuberculous; in older persons not more than 16 per cent. of similar cases are tuberculous. My own observations do not agree with this percentage, for tuberculosis in any part of the body is certainly a more serious condition than the above statement would admit. The usually good results obtained in the treatment of suppurative otitis media in children is an argument also against this statement.

Milligan also states in an article on this subject that "primary tuberculous disease in and around the middle ear is of rather frequent occurrence." I can not believe that there are many otologists who will agree with this statement.

MODE OF INFECTION.

As to the mode of infection in these cases, it is generally agreed that the infection takes place by one of the following three ways: 1, the eustachian tube, from the nasopharynx and its mucous membrane wall; 2, the blood or lymphatic system; 3, externally through a perforation in the drum membrane.

PREDISPOSITION.

Experience and observation lead me to believe in an inherited predisposition on the part of the patient for the development of tuberculosis in any part of the body, and more especially in the tympanic cavity. If there should be this "inherited predisposition" and the ear should become inflamed, then the localized lowered vitality will afford an excellent ground for the growth of a tuberculous process. The fact that E. Fränkel states that the danger of infection from the postnasal space is not very great is certainly significant, for among fifty autopsies on tuberculous patients he found tuberculosis of the postnasal space ten times, and yet in none of these was the middle ear involved. That an infection may take place, however, as the result of the presence of the tubercle bacilli without this inherited predisposition, I do not deny, but I must confess that I am a weak believer in this mode of infection.

CLINICAL MANIFESTATIONS.

Writers vary as to the clinical symptoms of this disease, but nearly all agree as to the absence of pain as one of the most common. In chronic middle ear suppuration of all kinds this symptom is also present, hence it is by no means peculiar to tubercular ulceration.

Grimmer, in his excellent article referred to, gives the following symptoms as characteristic of tuberculous otitis: 1, painless onset of the discharge from the ear; 2, two or more perforations of the drum membrane; the presence of pale edematous granulations; 3, creamy pus discharge; 4, facial paralysis coming on at a very early

stage; 5, bare bone which may be felt through the meatus.

Friedrich says that "granulations and polypi are not present as a rule," and yet in my own case I have never met with such exuberant granulations as those which filled the auditory canal. Bone necrosis and rapid exfoliation of the same are held as prominent symptoms of this condition, but these also show variations.

After all, I think we must agree with Milligan, who says: "The best and most reliable means of establishing the tubercular nature of the disease is by means of properly conducted inoculation experiments."

The all-important point of this paper is to elicit a free discussion as to the proper line of treatment after a certain diagnosis has been made. If the tympanic cavity is involved, and secondarily or even primarily the mastoid also as evidenced by necrosis or fistulæ, then the proper surgical procedure is clear.

On the other hand, if only the tympanic cavity is involved and granulations exist in the cavity, extending also freely into the auditory canal, if there is no other discomfort beyond a discharge from the canal, if the case is in no wise chronic in character, shall we treat the condition through the auditory canal or shall we make the radical operation through the mastoid immediately?

CONCLUSIONS.

My own experience leads me to the following conclusions:

1. If there is free drainage of the tympanic cavity through the auditory canal: if there are no granulations present and no symptoms of facial nerve paralysis; if the mastoid does not show, and has never shown any signs of involvement, and if there are no extensive areas of necrosis, I would treat the condition expectantly through the auditory canal.

2. If there is facial paralysis and extensive granulations extending out into the canal: if the mastoid shows or has shown involvement, whether tubercular or not, and the patient shows vitality enough to stand the anesthetic, I should propose the radical operation immediately.

During the last four years I have had three cases where there were extensive granulations springing from the middle ear and sides of the auditory canal and which almost entirely filled this latter. There was absolutely no history of involvement of the mastoid. In all of these I undertook to remove the granulations through the canal much to my regret, and they taught me the important lesson that the radical operation was the only one to be considered. The man who undertakes to treat profuse granulation tissue through the auditory canal will come to grief, and I am firmly convinced that the radical operation will prove to be the most conservative.

DISCUSSION.

Dr. C. M. Cobb, Boston—So far as my experience goes, when the infection of tuberculosis gets in the lymph current it goes with the current and not against it. The infection from the tonsil goes down through the neck and not up through the face. The lymph glands evidently stop some of the infection or they would not become inflamed. If it is absolutely certain that we can remove every particle of diseased tissue and all the bacilli, the operation is justifiable; but the patient is much more rapidly infected through the blood current than through the lymph current. The condition will become rapidly worse with a raw surface. My experience in operating on tubercular meningitis has been pretty bad. This result has been so invariable that I generally refuse to help operate on such cases. The patients apparently do not live as long as they would if left alone. What can be accomplished is through the treatment with iodoform. I do not think it is safe to use the curette for the granulations unless the patient is having symptoms of retention of pus.

Dr. B. A. Randall, Philadelphia—The cases in which we can prove the tubercular character of inflammation of the middle ear are rare. I have placed a number of specimens in the hands of our best investigators and they were unable to prove the presence of tuberculosis from cultures from the tissue; yet from the clinical standpoint it was unmistakable. I have had some very good results in cases where I was sure of the condition. While operating on a child six months of age for removal of polypoid tissue from the auditory canal, I found a tiny piece of loose bone in the upper back part of the tympanum. I caught it with the forceps and when withdrawn discovered that it was half of the stapes, which had been exfoliated. There was slowness of the movement of the face on that side, but not full paresis. The glands were much involved and I urged their enucleation, although the child was not of known tubercular history on either side. It was the only child and it was very important not to imperil life. On these grounds, radical intervention was refused and I curetted the tympanic cavities and from time to time twenty-seven glands and left the family physician three or four others to treat in this manner. The adenoid tissue in the pharynx was slight. A few weeks ago he walked into my office, a hearty little chap of 8, and when I saw him I felt glad I had done as I did. It was a cure, but whether of a tubercular process or not I can not say. The cultures were negative. All possible of the infected tissue in these cases must be eliminated. If we have in the middle ear, and especially in the mastoid, evidence of tubercular involvement, we must deal with it radically. With a family history of tuberculosis and typical appearance of the child, I have had good results, though I have not followed them for many years to confirm the outcome. I believe it is our duty to do radical work on these cases.

Dr. Dunbar Roy—It was an interesting and important case to me, because of its being the only child. The question of doing the radical operation was discussed and the opinion of another excellent aurist was obtained. He suggested doing a double operation on both mastoids immediately, but the child being almost moribund, this was abandoned. My experience in dealing with these cases through the auditory canal has been very unsatisfactory. However, I would not again treat granulations through the auditory canal, but would go into the mastoid immediately and do a radical operation.

THE NEW OPHTHALMOLOGY

AND ITS RELATION TO GENERAL MEDICINE, BIOLOGY AND SOCIOLOGY.

GEORGE M. GOULD, M.D.
PHILADELPHIA.

(*Concluded from page 1549.*)

Again the critic may justly ask: "Have none, then, recognized and spoken out this much unrecognized truth?" Oh, yes, many and good men have done so. There is a vast quantity of literature produced by clinicians of the best character and professional standing, and it is astonishingly convincing and cogent. It is unfortunately scattered, and hence, in part ignored by too many physicians. The last weighty utterances are Dr. Zimmerman's study,[6] and especially since they are from England, the excellent reports of Dr. Snell,[7] and Dr. Pronger.[8] Hundreds of others might be cited, the testimonies, *e. g.*, of such good professional journals as the *Cleveland Medical Journal*, the *St. Paul Medical Journal*, the *Lancet*, the *Pacific Medical Journal*,

6. N. Y. Medical Journal, Nov. 21, 28, 1903.
7. The Lancet, April 30, 1904.
8. Slight Errors of Refraction and Their Influence on the Nervous System, Harrogate, R. Ackrill, 1903.

American Medicine, the *Maryland Medical Journal*, *Colorado Medicine*, *Science*, *Mind*, the *Harvard Graduates' Magazine*, *Bulletin of the American Academy of Medicine*, *Canadian Journal of Medicine and Surgery*, *Dublin Medical Journal*, *Medical Press and Circular*, *Bulletin Chicago Health Department*, *The Practitioner*, *The Nation*, *Wisconsin Medical Recorder*, *Quarterly Medical Journal*, *Treatment*, *California Medical Journal*, *Medical Bulletin*, *Medical Council*, *The General Practitioner*, etc.

Of individual opinions a page of names could be easily cited, of men with good professional reputations, acquired and to be preserved, such as, for instance, Drs. Jackson and Bates of Denver, Edes of Boston, Southard of San Francisco, Hurd, Reik, Murdock, Welch and Halsted of Baltimore, Senn, Westcott and Walker (J. W.) of Chicago, Baker and Sherman of Cleveland, Cheney of Boston, Alleman and Prout of Brooklyn, Carmalt and Twain of New Haven, Coggin of Salem, Mass., Bennett, Starr, Pohlman, and Phillips of Buffalo, Risley, Pyle, Thorington, Hansell, Reber, Zimmerman, Solis-Cohen (S.), Thomson, Fenton, Murphy, Talcott, Williams, Hollopeter, etc., of Philadelphia, Callan, Ramsey, Carhart, etc., of New York, Van Duyn and Marlow of Syracuse, Taylor of Wilkesbarre, Würdemann and Black of Milwaukee, Roberts of Pasadena, Ellis and McBride of Los Angeles, Hale of Nashville, Matas and Souchon of New Orleans, and especially the dean of American ophthalmologists, Dr. Green of St. Louis, who for nearly 50 years has been refracting patients and observing the results. I append in a footnote[9] extracts from a personal letter written by Dr. Green because of its peculiar appositeness.

As optics grow into physiology, and physiology into pathology, so must our pathology merge into biology. How is eyestrain related to the evolution process of living things? The test of the validity of all medical truth, and distinctively of that we have been emphasizing, is its function in the great incarnation process summed up in the Bible, verity, "The Word became flesh," and in the consensus of doctrine in the term, Darwinism.

A truth none can deny, but one which all biologists have ignored, is this: Vision is the dominant condition of self-motility. Wherever there is an animal that moves, in the light, there are eyes. *Ubi motus ibi visus.* There could not have come into being any except the very lowest animalian organisms unless through the visual function. All nutrition, all safety, all attack and escape, all free-moving and effectual doing, was utterly and wholly by means of seeing. Thus the evolution process was dependent on, and made possible only through the evolution of the eye, both as a precedent and conditioning *sine qua non*.

And few have the most dim notion of the complexity of the organ of vision in man, or of the amazing difficulties of "Biologos" in fashioning and perfecting it. Millions of finger tips are bunched together in the one-inch cup of the eyeball, from whence run about 425,000 nerve fibrils to a topographic mechanism of sensation in the occipital lobe. The eye can see an object 1/1000 of an inch in diameter. The cones and rods are only 1/10,000 or 1/14,000 of an inch in diameter, and a million cones at the macula occupy a space of only 1/10 of an inch square. These crowded finger tips perceive the shape of the picture and the intensities of the light stimuli of all illuminated objects, of a millionth of a millionth of the kinetic energy of any other physiologic force, and of so short a duration as the 0.00144 of a second. And out of these infinitesimal waves the sensations called light and color are created. The mechanism which creates them must be in intimate and instant connection with the centers initiating and controlling every other sensation, of every motion, of every muscle of the body. Imagine for an instant what takes place in every animal and human being every day of its existence: A traveler tells of a monkey pursued by another, and running over and through the tops of the trees of an African forest faster than a deer could run on open ground. The flashing repetitive momentary glances of the eyes, before, back, and all about a hundred objects must be co-ordinated with a mathe-

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9. Dear Dr. Gould:

I have read your two volumes of "Biographic Clinics" with great interest, and have gained much instruction from them. I regard them as a very important contribution to a just appreciation of the distinguished men and women whose lives you have so sympathetically studied

The fact that the commonest ocular defects may give rise to morbid states, such as you have depicted, has impressed itself on ophthalmic specialists before it was recognized, and urged on the medical profession in the classical essay of Dr. S. Weir Mitchell, *American Journal of the Medical Sciences*, April, 1876. In the nine illustrative cases reported in that paper the trains of distressing and disabling reflex symptoms clearly parallel those analyzed by you in the fourteen biographic clinics, but with this difference: In his cases the dominant etiologic factor was discovered before irreparable damage had been done, and relief followed the timely prescription of appropriate glasses: in the lives which you have discussed, relief came only in advanced age, when accommodation ceases from troubling.

To me the central and very significant fact is that the prostrated sufferings, always alleviated by rest from eye work and always recurring with the resumption of studious pursuits, as portrayed in the several biographies from which you have culled, are such as ophthalmic practitioners recognize as dependent, in many persons, on common ocular defects, and as preventable or curable by properly directed optical treatment.

It can not be too strongly impressed on all intelligent persons, whether physicians or workers in other fields, that the demands made on the eyes in modern life are much greater than the visual apparatus, when of only average structural perfection, can meet effectively and safely. The lesson which I have learned from forty years of continuous study of the anomalies of accommodation and refraction is precisely in the line of your teaching, namely, that no degree of anisometropia or of astigmatism can be regarded as too small to demand accurate correction in persons compelled to use the eyes continuously, or in patients suffering either from so-called asthenopic symptoms or from headache or other reflex disorders induced or aggravated by eye work. Neither can I accord any measure of assent to the notion that a short term of attendance at a post-graduate school, or any period of apprenticeship in selling eye-glasses and spectacles, can qualify an uneducated or, at best, a crudely educated man to do work which often taxes my own powers to the utmost, and in which I find that the continued co-operation of the patient, by returning promptly for further advice when anything goes wrong and by permitting the necessary periodical revision of his optical correction, is indispensable.

It is surely not an extravagant contention that eyes which do not perform their function perfectly in all respects and under all conditions, or whose use is attended or followed either by local disturbances or by headache, nausea, insomnia or other reflex manifestations, ought, without exception, to be promptly and critically examined. That such examination will very often bring to light a previously unrecognized ocular defect, and so point the way to urgently needed relief through wearing properly chosen and properly adjusted spectacles, needs only to be stated to command assent. The knowledge that relief from headache may come through wearing glasses is becoming more and more widely diffused; but comparatively few physicians have learned, as yet, to recognize the protean forms which reflex disorders of ocular origin may take on, or to estimate at its true value the service which a wise and conscientious ophthalmic specialist may be able to render.

The investigation and treatment of functional disorders dependent on structural imperfections of the visual organs call for the exercise of the minutest care, and often of almost infinite tact and patience. That three essential qualifications are sometimes conspicuously lacking in men eminent for their achievements along other lines is also true. Careless or perfunctory refractive work by an ophthalmic specialist will yield no better results than similarly defective work done by persons of inferior scientific attainments and of vastly less reputation. The intelligent and painstaking pioneer work of Ezra Dyer; the invention and employment of new aids to diagnosis by William Thomson; the frank recognition and just appreciation by S. Weir Mitchell, of the far-reaching benefits rendered, in his reported cases, by William Thomson, William F. Norris and George C. Harlan; and lastly, the continued devotion to the cultivation of accurate methods by a long line of careful investigators down to the present day, make up a sum of achievement by Philadelphia men which may be regarded as more than sufficient to justify the recognition of a distinctive Philadelphia school.

The personal sufferings of Ambroise Paré and of Percivall Pott were the means of enriching surgical literature by two illuminating chapters on compound fracture. Your early experience of the torments and disabilities incident to a too long delayed diagnosis and connection of a complicated ametropia gives you, also, the right to speak forcibly and with authority.

Were not the Hebrew prophets decried, in their day, as enthusiasts?

JOHN GREEN.

matical precision to accurate unity and brilliant action of every muscle of the body. Similar perfection of eye and motion has been evolved in every higher animal of the world, and in every savage, and in every child. Your horse avoids all stones and knows, unconsciously, every inequality of the ground before and beneath him by the like mechanismal unity. Watch little children in play barely missing obstacles and dangers which would mean injuries and perhaps death, with swift unconsciousness. The history of savagery and of civilization is all there and is of the same nature. See with unbelievable accuracy if you would succeed, is the first verse of the biologic decalog. That is the physiologic Logos which became the biologic flesh.

But see inaccurately and you die, is the antithesis, and the animal which failed to obey perished, inevitably and quickly. The savage did the same, your horse that stumbles is useless, your playing child that hits its leg or trips becomes, at least, a very different child, and a very different man or woman from the others who do not make these visual and co-ordinating blunders. Such are the backward scholars in school and, in large part, they are your failures in life, society's expensive degenerates, defectives, and dependants. They are rapidly increasing in number with every step in civilization, because every such step means the entangling difficulty of added near vision.

All of which—and this is the heart of the matter—Darwin, a martyr to bad eyes himself, failed to see, and all of which no evolutionist has since caught sight of. And yet it has been one of the large controlling conditions of the evolution process. For not only has this unity of mathematic optics and physiologic function been the inescapable method of success in the struggle for existence, but it has been the chief mechanism whereby the so-called unfit have been thrown out of the count. Visual imperfection has been, and is increasingly becoming one of the dominating causes of the exclusion of the ontogeny from the propagating phylum. This is the fundamental distinction which differentiates the laws of biologic evolution and survival of those with and those without vision. It is the key which will unlock and reveal many of the profound mysteries of heredity and descent which to-day are tormenting the different schools of evolutionists and biologists. Open the door and walk into the long-closed ancestral hall and the mystery of forbear and aftercomer is revealed. How and why we are here is at once plain. None could have been, and we could not now be the link between the phylum of the past and that of the future, except on the condition of seeing well. Those not allowed to become such parental links were largely those who saw too inaccurately to compete in the beneficent but summary process.

Note well, however, two things: The most perfect organism in the past world of animal and man was useless without, first, this perfection of visual function, cerebral co-ordination, and muscular response; and, second, the attainment of this optical mechanism was far more transcendently difficult than any other physiologic task. To attain transparency and nourishment of cornea, lens, vitreous humor, and retinal end-organs, to superpose the images of the two eyeballs, to respond to the almost nothing of stimulus, to transmit to brain, to manufacture sensation, to dominate all other cerebral function, instigate and direct all motion—where is the end of the marvellous task! The end is in failure to do any one of these things, and to make that inch-in-diameter eyeball of a spheric perfection which shall not vary by 1/300 of an inch from the normal. The end is not to have prevented conjunctivitis, traumatism, keratitis, iritis, glaucoma, cataract, retinitis, and other multiform diseases, prone especially to occur in the astoundingly complex and refined organism. The pathology of animalian evolution has therefore been in large part the pathology of vision. The organism otherwise perfect except as to an infinitesimal visual part is thrown out by this optical necessity. The mechanism *par excellence* of the exclusion of the unfit is thus made clear.

To this now add the consummating and crowning function of vision—the creation of intellect. Psychology, history, and biology unite to demonstrate that the objectivation of the ψυχή of civilization is almost uniquely by means of vision. The greatest task of all human history was the creation of the letters of the alphabet. It was so difficult that only one race did it, and within one or two milleniums all others have come to a knowledge and use of civilization only through the adoption of the invention. No writing and printing, no civilization. But the letters of the alphabet are conventionalized symbols of pictures, or things seen. Add to this that language itself is of identic origin. There has been no speech except to express the result of ocular function. Almost all psychology is summarized as handlings, co-ordinations and deductions of visual images, of these and of the motions made possible by sight. Thus every cerebral function, perception, apperception, feeling, most of it, and willing, that which is effective, surely reasoning and judgment—all spring originally and constantly, are bound up with, dependent on, and interdependent with vision.

There is something more than mere imagery and fancy which analogizes the course and phases of these developmental stages to the way of water-flow in the world. Decidedly optical are the sun, cloud, rainfall and snowfall on the uplands and mountains whence spring the crystal streams and rivulets of physiology. In them, optics become function and action, physics become physiologics. The lower falling brooks become discolored and morbid when they reach the homes and degradations of man—physiology becomes pathology. But the stream broadens into the large river of biology with the commerce, the health and unhealth of a continent, until finally the Mississippi sweeps to the mothering ocean of sociology where sail and steam the navies of the world.

Thus all routes and efforts lead to man, all biology ends in sociology. Our striving is for human betterment; because all medicine is pre-eminently philanthropic. The beclouded or befogged mariner orients himself by means of an optical instrument, and as the sun and the sun's winds bear the sun-made clouds back to the faraway mountains again, so vision and optical eyes and instruments again complete the morbid and therapeutic circle, the cure which is always beginning and never complete.

My contention is that here is a great means of civilization. It is a profoundly important thing that the hopeful Carlyle of the "Characteristics" should have become the pessimist of "Shooting Niagara and After." It is civilization's tragedy that Nietzsche should have had havoc played with his mind by eyestrain; that Huxley should have been driven from work at the height of his powers; that DeQuincey should have been an opium eater; that Darwin should have been able to work but two hours a day with his eyes, and Parkman

but a few minutes: is it not a sad thing that George Eliot and her books, Symonds and his great opportunity, Twain and his great scholarship should have suffered as they did? Is it not a pathetic source of social misery that 10 or 20 per cent. of eyes are incapable of sewing, typewriting, book-keeping, lathework, studying, draughting, and a still sadder thing that their owners have no knowledge of the fact, and that they should suffer until "break down" comes? Is it not an awful thing that from 40 to 60 per cent. of all school children are sickly? That suicide is increasing, insanity and epilepsy incurable, hospitals multiplying—and taxes, and prisons, and war, and want? A certain, perhaps a large, per cent. of all these backward school children, epileptics, prisoners, insane, hysterics, neurasthenics, dyspeptics, have such eyes that glasses correcting their optical defects would bring them much relief, would often have prevented much or all of their tragedy. And the proof is this: Put any pair of such spectacles on any one of us, and within an hour there would be headache, giddiness, vomiting or intense suffering. The cynics and skeptics of "eyestrain exaggeration" can be speedily converted whenever they are earnest enough to try a simple experiment on themselves. It is a truth awful in its significance that in civilized countries there are millions of people who are good products of the evolutionary mill, who have sound minds and good bodies, but who are partial or complete failures, always with intense personal suffering, simply because of an infinitesimal malcurvature of the cornea, a too long, or a too short eyeball, no greater than the thickness of a sheet of thin paper. It is the little thing that, overlooked by others, makes or mars all undertakings, all sciences, and all cosmic proceeding. The compass guides the ship, and without it there would be no civilization as we see it. Without vaccine virus there would be a different world, there could hardly be civilization, and yet it was a generation after farmer Jesty inoculated his family from the teats of the cows in the field before even Jenner dared do the same, and before the best of the profession would have anything to do with it; and to-day there are perhaps a million antivaccinationists in America! When Pasteur had demonstrated what Villemin and Davaine had before said was true, the bacterial origin of some diseases, history records that, "the doctors, in the great majority, were violently opposed to the germ theory of diseases. They answered experimental proof with oratory. The less excited among them urged temporizing. The surgeon Chassaignac warned Pasteur that laboratory results should be brought out in a circumspect, modest, and reserved manner, etc." In 1843 Dr. O. W. Holmes conclusively showed that puerperal fever was contagious. We ignored the fact. In 1846 Semmelweiss of Vienna independently proclaimed that puerperal fever was due to inoculation by nurse, midwife, or doctor, and that this contagion could be prevented. For this bravery and clinical acumen Semmelweiss was persecuted by his medical brethren, turned out of his professorship and ruined. In the Paris Maternité Hospital in 1856, 64 women died of the disease out of 347 admitted. In 1864, out of 1,350 cases, 310 died. At last in 1874 Fornier and Budin introduced the "new" views of Pasteur and Lister, and in spite of what Dr. Roux calls the "tyranny of medical education," they were accepted, and puerperal fever disappeared. Would it not have been an inestimable gain not to have persecuted Semmelweiss, and instead, to have examined and tested his theory? In 1888 Dr. G. Martin stated that "migraine" was due to astigmatism and published proofs. In 1903 and 1904, the *Medical News* likens those who say the same thing to Dowie and Mrs. Eddy, and the leaders of the New York Academy of Medicine call a special meeting in order to snuff out of existence the advocate of such a senseless theory. And yet migraine is due to eyestrain as any one can prove whenever he wishes, and as thousands of patients will testify whenever asked. Migraine is peculiarly a disease of civilization, increased with every added hour of near-work with the eyes; and civilization is enormously increasing that constant strain of near-work with eyes evoluted during millions of years for a different function.

There is hardly an instance in all history of a great and beneficent medical discovery that was not either ignored or hated and scorned by the official leaders, and by the great part of the entire profession. It was so with vaccination, with anesthesia, the germ-theory of disease, Mendelism, thoracic percussion, ovariotomy, antisepsis in surgery, the etiology of yellow fever and malaria, the serum treatment of diphtheria, Pasteur's antirabies inoculations, the humane treatment of the insane, etc.

Now the amazing fact about all of this is its case of proof or disproof, the passionate hatred with which was rejected a possible source of relief of human suffering, the harmlessness of the trial, the utter forgetting of the patient, the supreme interest in the prejudice. Vaccination is harmless and its protective effect easily demonstrated. To tap the chest with the finger is a very simple proceeding and the sounds elicited are easily recognized. It is not difficult, if so minded, for the nurse, midwife, and doctor, to be clean, and thus test if puerperal fever is contagious. The physicians who clamored against railway travel because it would make passengers sick, giddy or insane, and said if the foolish would build railways board fences must be built above the height of the cars—these physicians could have got on the cars and disproved their theory. The opposers of the theory of circulation of the blood might at least have tested the theory by pricking their finger. The prejudice against rabies inoculation, the diphtheria antitoxin, the mosquito-theory of malaria, and yellow fever, etc., which resulted in untold deaths and delay of scientific progress, could have been easily tested. It is childishly simple to test the power of astigmatism to produce or cure migraine, and yet many prefer not to make the test.

There are probably not a half dozen hospitals or ophthalmic clinics in the world outfitted with a trial-frame or set of test lenses that would enable even an expert refractionist to diagnose ametropia with the perfect accuracy which is necessary to cure morbid ocular reflexes. But those set to do refraction work in the public clinics are not expert. They are the students and learners. Hence nine-tenths of the glasses prescribed in these institutions are not correct. Ophthalmic surgery and inflammatory diseases are all that interest, and these would be largely preventable by the refraction that is neglected and misdone.

Even in the institutions for the blind, it has been found that some of the inmates are not blind, and that their remnants of vision may be so vastly improved as to make these dependents self-supporting. In every school of the world at least 20 per cent. of the pupils are suffering from ill-health due to imperfect eyes, and yet pedagogics, except infinitesimally and incipiently, does not know and does not care. The teachers and profes-

sors in preparatory schools, colleges, universities, technical and other schools, pay little or no attention to the ventilation of the rooms, or to the refraction of the eyes of their students. These are constantly breaking down in health, or in study, from migraine, etc., and the general scholarship is vastly depreciated because of the neglect of the eyes. An official and resident expert refractionist would make a university outdistance its rivals more than does all its "athletics."

In every asylum for the insane some patients are there because of bad eyes—and if only a few are curable of the chronic disease, many could be relieved of the headaches, gastric, and other nutritional diseases which burden the attending physicians and the taxpayer. In one great institution for epileptics, a little experiment with glasses, imperfectly executed in many ways, showed a greater percentage of cures, a greater reduction in the number of seizures, than by all other methods of cure combined that had been tried in the institution. And yet the official report characterized the experiments as "disappointing," and sneered and misrepresented it. Epilepsy, it has been demonstrated, is in many cases due to ametropia; many cases could be prevented by proper glasses in the child, or during the early history of the case. In the chronic, severe and hopeless cases it may not be always or even frequently curable. The conditions of the glass-treatment are exceptionally difficult to carry out, and often can not be done at all, especially if conscience and sympathy are absent. The improved general health, freedom from headaches, etc., would make it at least a saving of money for the state to pay an expert resident oculist. This, apart from the humane consideration. Nobody can rightly estimate the number of degenerates, paupers, defectives, and dependents, loaded on the producers and taxpayers because reading, writing, sewing, study, handicrafts, etc., are impossible to a person with disqualifying astignatism. Neglect of the fact greatly increases the tax rate, and makes the philanthropic miserable.

Why does the truant school boy exist, and why does he so often develop into the young criminal? If the majority of these, as Dr. Case of the Elmira reformatory finds, have an ocular defect that makes vision impossible for any continued reading, writing, or handwork, does not the fact modify all penology? If the sewing-girl can not possibly sew, or do any such kind of eye-work, what alternative is often left her except crime? Sociology is very frequently another name for ophthalmology.

And if even to-day, in the city, the poor can not be fitted with a simple device to make their lives happy and independent, how is it with the other half or three-quarters of the people who live in small towns and in the country supplied only with the itinerant criminal spectacle-peddler? The farmers and their families now waste most of their evenings and their winters, and then the sociologist blames them for their vile country newspaper and their unprogressiveness.

Philosophers and thoughtless critics bewail the literary pessimism of the age. It is indeed a pitiable and a pitiful fact. In a time when comfort and possibility of education and of enjoyment have suddenly increased a hundredfold, why the strange phenomenon of vastly increased skepticism, mental suffering, hopelessness and melancholy? Who have set the fashion? Certain powerful, but in some respects morbid, literary geniuses. Who were they? Those almost without exception who were great sufferers from physical disease. Of what disease? Simply of "migraine." Without a thought of the class to which they may belong, make a list of the literary pessimists of the last century, and another list of the optimists. The pessimistic or gloomy writers and artists were almost entirely great sufferers from eyestrain and from its result, migraine. They were, for instance, Nietszche, the two Carlyles, de Maupassant, George Eliot, Wagner, Tchaikowsky, Chopin, Symonds, Tolstoi, Heine, Leopardi, Schopenhauer, Turner, Obermann, Thomson (the younger), Poe, and many others. Others that partially or wholly conquered the "migraine" of eyestrain, by opium, or by renouncing ocular near-work, by walking, etc., are Mrs. Browning, DeQuincey, Coleridge, Beethoven, Parkman, Whittier, Margaret Fuller, Browning, Huxley, Spencer, Taine, Darwin, Lewes, Hugh Miller, Southey.

The optimists, the cheerful, hopeful, encouraging, loving, and helpful ones, were, a few and at random, Goethe, Mozart, Verdi, Ruskin, Wordsworth, Ste. Beuve, George Sand, Emerson, Lowell, Longfellow, Hawthorne, Kant, Scott, Bronti, Dumas, Voltaire, Gibbon, Macauley, Mommsen, and a host of others.

In not one of the lives, or writings, of these last will you find a hint of eyestrain or migraine, hardly even of ill-health. Note also that the pessimists are mostly atheistic and materialistic, while hardly one of the healthy optimists is so. One may also remember the tendency to despair and even suicide in those who suffered the most from migraine. It is exactly so in private practice to-day. Pessimism and atheism are an expensive tax on the natural vitality, a danger to the public health, a brake on the wheels of the progress of civilization. If we care naught for the personal and preventible sufferings of these great workers in humanity's cause, nothing for those of the literary and other laborers tremendously increased by the very nature of their tasks, we at least should consider the welfare of the generations that follow us. As the creation and perfection of vision has been the condition of past biologic evolution, so its normalization and the avoidance of its pathogenic results is one of our highest professional duties and ideals.

TYPES OF CHILDREN.*

W. S. CHRISTOPHER, M.D.
CHICAGO.

For many years—indeed, since the advent of the more exact scientific methods in medical research—it has been, to say the least, unfashionable to refer to "diatheses" and "temperaments." It is not difficult to find why these terms have dropped into disuse, and the reasons are good. Not only are the general terms themselves illy defined, but the attempts made to differentiate their subdivisions and parts are equally inchoate and confusing. They become, therefore, an easy refuge for inexact thinking, a condition obnoxious to modern medical methods. And yet we owe so much to the fathers, and have such great reason to admire the genius with which they brought to light many fundamental truths when surrounded by vicious methods of reasoning and faulty, inexact and incomplete methods of investigation, that it becomes a duty to give respectful attention to and make careful investigation of their dicta, even when adherence to them is withheld. Even so recently

*Address before the Ohio State Pediatric Society, Cleveland, 1904.

as my own student days, and more recently still, the old woman's practice of giving teas to new-born babies was laughed at. Now we know that the kidneys of the newly born are very frequently the site of a uric-acid infarction, and that if we would prevent some of the pain of the new baby we must supply it with fluid, and we know that this fluid should be sterile. The herbs from which these teas are made are probably without any value for the purpose for which they are given, but the fact that they are administered as teas insures sterilization of the liquid. That a practice involving such a combination of important truths should have become so firmly established as to have become a custom, and that when the actual reason for its verity was utterly unknown, has long impressed me as but little short of wonderful, and has forced me to give respectful attention to the beliefs of the old practitioners. A very similar instance is the universal custom of giving a daily bath to the new-born baby, a custom carried out even among people who do not always taken even an annual bath. It is not difficult to mention numerous customs of long-established practice, whose *raison d'être* is of very recent discovery. It is such well-established facts which induce us, nay force us, to go back and examine carefully the old doctrine of the diatheses and temperaments of our forefathers.

Trousseau accepted Littré and Robin's definition of diathesis, which was as follows: "Diathesis is a general tendency, in virtue of which an individual becomes the subject of several local affections similar in their nature." This definition is broad enough to include syphilis, and what has been called the "strumous" diathesis—in other words, tuberculosis. But if diathesis includes the chronic infections it ought also to include the acute ones. This would make it almost synonomous with sickness. It is clear, therefore, if the term is to have any use, that the infections should be excluded from it, at least to the extent of refusing to consider infecting agents as direct causes of diathetic manifestations. So also should there be excluded all causes of morbidity which act from without the body, such as geographical and climatic conditions, occupations and social relations. In other words, it would seem just to limit the causes of the so-called diathetic manifestations to nutritional factors. Even the influence of heredity should be considered only in its nutritional relations.

Nutrition is a very comprehensive process. It has to do not only with the foodstuffs, but with their digestion and absorption. It has to do with the so-called internal digestion, or elaboration of absorbed material by such great organs as the liver, the thyroid, the thymus, the adrenals and the pancreas. It has to do with assimilation after all this preparation, and with disassimilation and the modifications of the end products of the metabolism, and as well with the intoxications produced by these end products, and with their excretion.

To me it seems clear that the processes which we speak of as diathetic, when we allow ourselves this liberty, all center around and have their chief origin in the great elaborating organs, especially the liver, the pancreas, the thyroid and the adrenals, while influenced also by each of the other features of the nutritional process.

In this sense diathesis can be expressed as the prevailing type of metabolism of the individual. This means that every individual has some diathesis, and, in some instances, I hope to show, has more than one.

The study of this metabolism, so far as the clinician is concerned, must be approached first through the urine, that great metabolic resultant.

The study of the urine in this connection requires an examination into the relations of urea, uric acid and the other alloxuric bodies, sugar and its congeners, the acidity, the inorganic salts, particularly the phosphates, the oxalates, as well as some other substances of very infrequent occurrence. My own study of the urine as related to diathetic states has been limited to urea, acidity and sugar. With these, for practical purposes, indican must be included, although being generally an expression of intestinal putrefaction, is not really a metabolic product. I am perforce compelled to limit my remarks on this occasion to my own line of observations.

Some seven or eight years ago I began to make occasional determinations of the acidity of urine, and, finding some very interesting things, finally adopted the plan of determining the acidity of every sample of urine brought into the office, and the further plan of having all office patients bring urine nearly every time they came, and not infrequently having them send specimens between their visits.

The method employed to determine the acidity was this: 10 c.c. of the urine, together with a few drops of an alcoholic solution of phenolphthalein, were placed in an evaporating dish and decinormal solution of sodium hydrate run in from a burette until the faintest possible permanent red of the phenolphthalein was noted. The number of c.c. of the N/10 soda solution used was then recorded as the index of acidity. At the same time the so-called percentage of urea was determined by a Doremus' ureometer, or other form of nitrometer, as well as a rough colorometric determination of the indican. Later I began to use the safranin test for sugar, originally recommended by Crismer. This latter test has proven very interesting to me. Safranin is one of the coal tar dyes. I have always employed the water soluble safranin prepared by Grübler. A 1/10 per cent. aqueous solution, which is blood-red in color, was the one used. When heated with sugar in the presence of an alkali the safranin is changed to a leuco-compound and the color disappears. This leuco-compound is, however, very readily reoxidized by free oxygen, so that the slightest agitation, even a bubble rising, will cause some return of the red color. Great care must, therefore, be employed in using it quantitatively. In applying the test a series of test tubes is taken, into each of which is put 1 c.c. of urine, 1 c.c. of normal sodium hydrate, and varying quantities of the safranin solution, viz., 1 c.c. in the first tube, 2 c.c. in the second, 3 c.c. in the third, and so on. These tubes are then placed in a beaker containing glycerin and carefully heated to 180 to 190 F., a thermometer being placed in the glycerin to determine the temperature. The number of tubes in which the safranin is decolorized is recorded as the safranin index. Nearly every urine will reduce some safranin. The reaction must, therefore, not be confounded with the ordinary copper tests for sugar, nor must a urine which reduces safranin be considered what is generally understood as a diabetic urine. I have found over 90 per cent. of all urines I have examined to give a positive reaction to the safranin test. If, therefore, it shows sugar, it can only mean the so-called physiologic sugar which is now generally admitted to be present in normal urine, but in quantity too small to be shown by the ordinary tests. What is the evidence that safranin shows sugar and nothing else? 1. It is reduced by sugar; 2. it is not reduced by uric acid or creatinin; 3. I have personallly determined that the safranin reducing substances found in non-diabetic, as well as that found in diabetic, urine can be gradually and in the end completely removed by

mixing the urine with yeast and subjecting it over several days to a temperature favorable to the growth of the yeast plant. This does not absolutely prove that nothing found in urine but sugar can reduce safranin, but it does put it on a better basis than any other sugar test of which we have knowledge. The unreliability of Fehling's was very well shown by some experiments which I conducted in conjunction with Dr. Julius Eichberg of Cincinnati. We found that a solution of glucose in pure *water* of the strength of 1 to 1,000,000, reduced Fehling's reagent and produced a precipitation of cuprous oxid, while a solution of glucose in *urine* of a strength of 1 to 500 failed to reduce Fehling's reagent. A solution of the same strength, however, of which half of the diluent was this same urine and the other half water, did reduce Fehling's. We are forced to conclude from this that urine apparently normal contains something which prevents the ordinary Fehling's reaction. Whatever the nature of this interference may be, it evidently occurs in varying degrees in different urines, as I have found a urine with a safranin index of 14 which failed to show sugar either by the copper or the phenylhydrazin

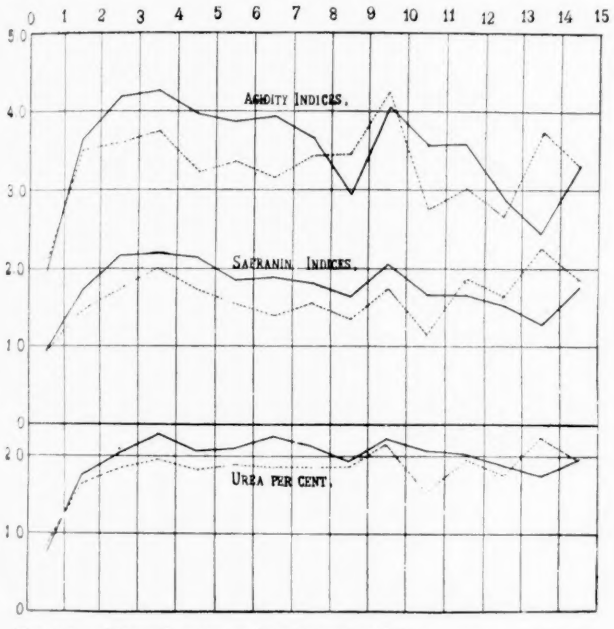

Chart 1.—Normal urea, safranin and acidity curves. Solid line, boys; dotted line, girls.

test, while ordinarily a urine with a safranin index of 3 will show sugar by the copper test. It has also been shown that phenylhydrazin does not always precipitate all the sugar present in a given urine. On the whole, I think we are safe in saying that the safranin test for urinary sugar stands on at least as reliable a basis as any other test for this purpose, and is quite as free from legitimate criticism as most other tests in biologic chemistry.

The special value of the safranin test to the clinician is its applicability to the determination of the quantitative variations in the physiologic sugar of the urine.

One year ago I took all of my recorded urinalyses, which showed the urea percentage and the acidity and safranin indices, and for which I could determine the age and sex of the children, and subjected them to a somewhat critical analysis. This review[1] of these analyses, some 3,500 in number, revealed some rather interesting conditions. The average of each of the items of examination, viz., urea percentage, acidity index and safranin index was determined for each year of life and for each sex separately. The number of urinalyses for each year up to 14 was sufficiently large to secure fairly accurate norms, as shown by the regularity of the resulting curves which are here reproduced.

A study of the development of urea excretion, as expressed by percentage, shows the following:

1. This percentage is very low in the first year of life, being considerably less than 1 per cent.

2. In the second year of life it increases very rapidly to a little less than 2 per cent.

3. It then increases more slowly to 3 years of age (the fourth year of life) when it reaches its maximum, about 2¼ per cent.

4. From this time on it runs a fairly constant course, with some tendency to decrease, up to puberty, when it is about the same as in the second year of life.

5. As to the sexes, the curve for girls parallels that for boys, but is lower than the masculine curve, except in the first year of life, until the age of 12 is reached, when it crosses it.

As will be seen from the chart, the safranin curve parallels the urea curve with singular fidelity, except that the feminine curve crosses the masculine curve at 11 years instead of 12.

The acidity curve also follows the urea curve generally, but is more irregular, a condition due first to the fact that acidity itself is a very complex result, and next, this factor was much interfered with in many of these urinalyses because of the free administration of alkalies.

Until further work is done on these lines we can accept these curves as expressing norms, with which the conditions found in any individual child can be compared to determine its variations from the normal, just as we compare the measurements of the individual child with anthropometric norms to show vagaries in growth which go so far in explaining some morbid states. It is for the special purpose of calling attention to deviations from the chemical norms, as expressions of diathetic conditions, that I have called attention to the norms themselves. I wish to deviate for a moment to refer again to the crossing of the curves of the two sexes in these three chemical factors at the ages of 11 and 12. The curves of the sexes representing growth in stature cross at 11 years, so do those of height sitting, while those of weight cross at 12 years, the same years at which the urea, acidity and safranin curves cross. Hence these norms of chemical factors illustrate the profundity of the processes of puberty, in a direction, I believe, not hitherto shown.

In using the foregoing norms it must be remembered that the variations in the urine of a child from day to day are often very considerable, and consideration of a single urinalysis is liable to be very misleading.

"To determine the mininum number of observations necessary to establish with some degree of significance the average safranin index of an individual, the following study of these urinalyses was made. A list was made of all individuals under 21, of whose urine ten or more examinations were made; also of the number of examinations of each, and of the average safranin index of each individual. There were altogether 77 individuals (both sexes) with 1,559 urinalyses, making an average of 20.3 examinations for each. The average of all their safranin indices was 1.82. The average safranin index of all urines examined, adults excluded, was

1. The Safranin Test for Sugar in the Urine of Children.—THE JOURNAL, A. M. A., June 20, 1903.

1.81. Of the 77 individuals, 11 had exactly ten urinalyses, and the average safranin index of these 11 was found to be 1.81. This would indicate that for a given individual not less than ten examinations should be made to determine his average safranin index. Of the 77 individuals with ten or more examinations, 11 had a safranin index between 2 and 2.5; 11 had an average safranin index between 2.5 and 3; with 2 the average index was between 3 and 3.5, and with 4 it was 3.5 or more; the maximum was 3.92."[1]

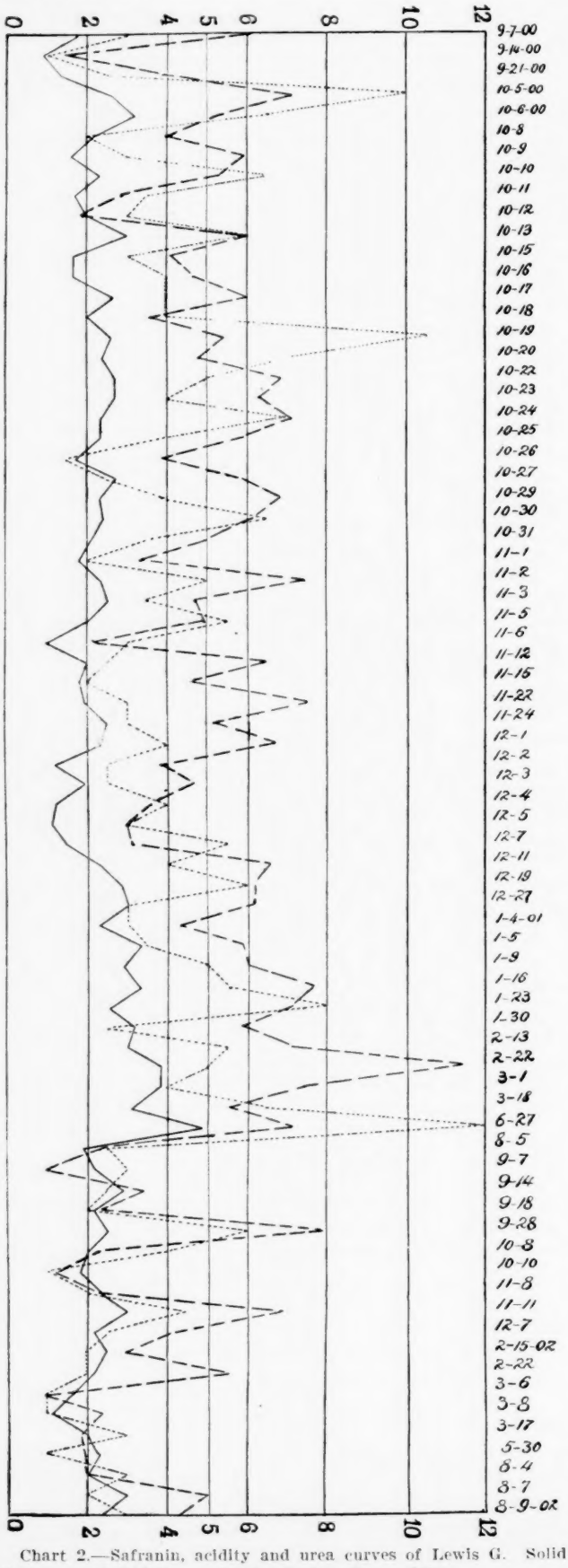

Chart 2.—Safranin, acidity and urea curves of Lewis G. Solid line, urea; dotted line, safranin; broken line, acidity.

Lewis G. was under observation from Sept. 7, 1900, to Oct. 9, 1902, from the age of 19 months to the age of 44 months. During this time 78 urinalyses were made, in all but 4 of which the safranin test was made. Chart 2 illustrates his urinalyses. These examinations gave an average urea percentage of 2.27, average acidity index of 4.82, and an average safranin index of 3.92. The average of the norms for the three years in which his age fell are urea percentage 2.02, acidity index 4.04, and safranin index 2.02, indicating throughout a concentrated urine of high acidity and very high safranin index. A consideration of the chart illustrating this boy's urine leads to the following conclusions, which are also in harmony with observations made on other patients:

In general, safranin and acidity parallel each other. Occasionally a high acidity will be found to precede a high safranin by a day, and begin to drop the same day that the safranin index reaches its maximum. In general, a high safranin does not last more than two or three days; high acidity not infrequently persists longer, and may occur independently of the safranin reaction. High safranin very rarely occurs independently of high acidity.

A few extracts from this boy's clinical history are now in order:

He had jaundice neonatorum and has always been pale and sallow. Was brought Sept. 7, 1900, for painful micturition. His urine then showed acidity 6.2, urea 1.7, ind. +, saf. 3. He was put on kal. bicarb., gr. 4, kal. nitrat., gr. 1, and vin. colch. sem., gt. 1, every two hours. This will hereafter be called his alkaline mixture. One week later the urine showed acidity 1.4, urea, 0.9, indican +, and safranin 1. Urination was less painful. Alkali continued. Ten days later he had some fever, with putrid stools and a canker sore, which quickly yielded to calomel. On October 19 his urine gave a safranin index of 10½ and also reduced bismuth and Fehling's test. Nov. 1, 1900, trouble again, with putrid bowel contents. Jan. 23, 1901, urinalysis: sp. gr. 1,028, acidity 7.2, urea 2.6, indican absent, safranin 8. Was given pulv. doveri, gr. 1/10 t. i. d., and one week later urine showed sp. gr. 1,026, acid 5.8, urea 3.2, indican absent, safranin 2½.

In June he was brought in with the statement that he had had in March a grip attack which particularly affected the bowels, producing a mucous discharge which lasted for five or six weeks. After some improvement for two weeks the condition returned and was present at the time of his visit. His urine then showed acidity 7.2, urea 4.8, indican +, and safranin 12. He was put on his alkaline mixture and the bowel symptoms promptly cleared up and his disposition was much improved and his sleep became quieter. He was still taking the medicine when he was brought in on Aug. 5, 1901, at which time his urine showed acidity 2.3, urea 1.8, indican absent, safranin 2½. During the fall he continued in fairly good health, but was on the alkaline mixture much of the time. He would occasionally have slight attacks of putridity of bowel contents, requiring calomel, once or twice showed slight jaundice, and much of the time presented a geographical tongue. When he finally dropped out of observation he was in much better condition, showed less autotoxemia, and his urine ran close to the normal.

The accompanying table shows the average urea and acidity and safranin indices, with the average age of all cases up to April, 1903, for whom 10 or more urinalyses were made and whose average safranin index

was above the normal for the age. For convenience, parallel columns show norms. This table is intended to illustrate the general peculiarities of the urine of children presenting abnormally high safranin reactions. Arrangement is in the order of the safranin indices:

TABLE 1.

No.	Name	Sex	Age	Aver. Acid	Norm. Acid	Aver. Urea	Norm. Urea	Aver. Saf.	Norm. Saf.
			Yr. Mo.						
1	T. F.	M	5 9	5.30	3.84	2.55	2.10	2.06	1.87
2	E. R.	F	4 7	3.35	3.23	2.09	1.84	2.08	1.75
3	H. I.	M	6 2	10.21	3.95	5.66	2.25	2.23	1.90
4	R. R.	M	11 10	1.95	3.60	1.24	2.01	2.27	1.69
5	D. M.	F	2 7	5.49	3.59	2.48	1.85	2.29	1.73
6	M. S.	F	5 8	3.75	3.38	1.99	1.92	2.29	1.57
7	H. C.	F	9 9	5.23	4.23	2.91	2.14	2.35	1.75
8	F. S.	M	3 2	4.63	4.27	2.40	2.29	2.44	2.22
9	M. S.	F	4 1	4.25	3.23	2.48	1.84	2.50	1.75
10	H. O.	M	9 10	4.33	4.05	1.97	2.22	2.57	2.06
11	W. G.	M	2 7	4.78	4.20	2.21	2.03	2.60	2.14
12	D. C.	F	1 11	5.25	3.49	2.39	1.64	2.66	1.69
13	E. E.	M	3 7	5.76	4.27	2.51	2.29	2.68	2.22
14	F. H.	M	3 3	5.04	4.27	1.98	2.29	2.68	2.21
15	E. H.	M	2 11	4.75	4.20	2.13	2.03	2.77	2.14
16	C. A.	M	6 9	3.72	3.95	2.15	2.25	2.77	1.90
17	C. A.	M	8 11	5.37	2.96	2.87	1.97	2.77	1.80
18	L. F.	M	2 3	4.88	4.20	2.03	2.03	2.96	2.14
19	F. F.	M	4 10	5.98	3.97	3.03	2.08	3.00	2.13
20	W. S.	M	2 7	5.71	4.20	2.41	2.03	3.23	2.14
21	R. W.	M	3 5	3.14	4.27	1.75	2.29	3.34	2.21
22	A. M.	F	4 2	5.06	3.23	2.21	1.84	3.38	1.75
23	R. B.	M	4 3	3.46	3.97	2.65	2.08	3.60	2.13
24	L. G.	M	2 7	4.82	4.20	2.27	2.03	3.92	2.14

Nos. 16, 21 and 23 were typical instances of high safranin. Of 24 cases showing excess safranin, 20 also had high acidity, illustrating very well the general association of these two phenomena. The table also illustrates that both high acidity and high safranin may occur independently of each other, indicating difference in origin.

The history of Lewis G. (Case 24 in the table) gives a fair view of the clinical course of a well-marked case of the saccharin diathesis. It is impossible to review in detail the clinical histories of these patients, beyond a comment or two on a few of them:

Case 22.—Aimee M. Has always been a well-developed and well-nourished child, with an appetite that has needed curbing and with a tendency to minor skin eruptions, canker sores in the mouth and gingivitis. Often troubled with putrid bowel contents.

Case 11.—Walter G. Was a difficult baby to feed, and from the age of 16 months for three years had persistently elevated temperature ranging in the morning from 99 to 99.5 (rectal), to 100 to 101 (rectal), in the evenings, and most of the time in apparently very good health and gaining regularly in weight. Since last fall this boy's temperature has been normal most of the time. Another boy in the same family seems to be about to follow in the older brother's footsteps.

Case 20.—William S. At 21 months had a convulsion and two weeks later another. No fever. Urine showed acidity 6.0, urea 2.0, safranin 3, no indican. Put on alkalies, with prompt improvement in general conditions. Three months later another convulsion. During the next year, two more convulsions. None since.

Case 21.—Ralph W. Was a difficult baby to feed, who did badly on milk, especially uncooked milk, and well on beef juice.

Case 12.—Dorothy C. A delicate, nervous, sensitive child, continuously under weight. Subject to periods characterized by malaise, lack of appetite and marked languor. In each of these periods urine always highly toxic, i. e., showed high acidity and high safranin. Each spell quickly dissipated by alkalies. Twice she had slight jaundice. This child's urine was a perfect indicator of her feelings. Deficiency of weight was always a feature. Under the influence of alkalies, with the consequent improvement of general conditions, her weight would always increase.

Case 23.—Russell B. Had bronchitis which was very persistent, and subject to exacerbations. Promptly relieved by alkalies.

Case 10.—Harold O'C. This boy's autotoxemia was associated with diarrhea, headache and slow gain in weight.

Melvin I. At 2½ years of age suffered much with "dyspepsia," characterized by abdominal pain and undigested food in feces. Urine at this time highly toxic. Later some eczema. Under alkalies and colchicum he made rapid improvement in digestive symptoms and gained rapidly in weight.

Cyclical vomiting, or as I personally prefer to call it, recurrent biliousness, is always accompanied by high acidity, but not always by high safranin. For purposes of illustration, I present two recent and typical cases:

Anna J., age 7 years. Has been troubled with recurrent biliousness for two years past. Last attack began on the 6th inst., and lasted 30 hours, during which period she vomited thirty-five times. The urinalyses were as follows:

	May 7.	May 8.	May 9.	May 10.
Acid	6.8	9.1	3.2	4.4
Urea	1.8	3.2	3.0	2.8
Indican	+	+	0	+++
Albumin	0	0	0	0
Safranin	2	2	1	6

Treatment.—Soda bicarbonate, calomel, and enemata of plain water.

Eldon V., age 2 years. Subject to recurrent biliousness. Commenced vomiting on the 7th and vomited about ten hours. Urinalyses as follows:

	May 8.	May 9.
Acidity	14.7	1.3
Urea	3.0	0.7
Indican	++	++
Albumin	0	0
Safranin	5	0.5

In this second case it is interesting to note that even after complete recovery the urine contained large quantities of indican.

A case unique in my experience, associated with toxic urine, was the following:

Bonna B., age 21 months. This child, brought in from Emporia, Kan., presented the most marked choreic movements that I have ever seen. The condition had been present for several weeks at the time I saw her, in consultation with Dr. G. M. Gafford, and the choreic movements were so severe as to require chloroform narcosis to produce sleep. The single sample of urine obtained before she died showed acidity 9.4, urea 1.6, indican 0, albumin 0, safranin 3.

Several times I have met what was symptomatically meningitis, apparently due entirely to autotoxemia. The most striking instance was the following:

Gretchen J., age 8 years. This child had been sick two days when I first saw her, there being present fever, intense headache and persistent vomiting. I found also opisthotonos, photophobia, irregular pulse and Cheyne-Stokes respiration. Her urine showed an acidity of 18. She was given two teaspoonfuls of baking soda during the next twenty-four hours, and at the end of that time all symptoms had ceased. The soda was then stopped and in another twenty-four hours all the symptoms had returned. On resorting again to the baking soda the situation was again controlled and complete recovery ensued.

(To be continued.)

CONSTIPATION IN INFANTS.*

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Complete digestion embraces a three-fold function—viz., conversion, absorption and evacuation. There is a conversion and an absorption of the nutrient element of food, and following these is an evacuation of the refuse.

The successful performance of these several divisions of the digestive function is dependent on each other, on

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Diseases of Children, and approved for publication by the Executive Committee: Drs. S. W. Kelley, H. M. McClanahan and John C. Cook.

the character of food ingested, and on certain secretions and motions of the organs involved.

If the food be of such character, or if it be so contaminated, that it over-stimulates secretions or exaggerates peristalsis, the lower bowel responds to the excitation and a diarrheal condition results.

On the other hand, if the secretions are not properly elaborated or if the mechanical movements of the bowel are insufficient to propel the contents of the intestine along its canal, the products of ingestion will be retained beyond that period necessary for all purposes of conversion and of absorption. This constitutes constipation; which may be defined then as a condition in which the products of food are retained in the bowel after they have lost all nutritional value and have become, therefore, foreign matter.

Constipation, it is true, is only a relative term, but it expresses a condition no less definite than that conveyed by the opposite term—diarrhea.

To determine the existence of either, the knowledge of just how many stools are normally evacuated during the day is of secondary importance to the knowledge of what character and volume the normal stool should be.

There are certain anatomic differences in the digestive tract of the infant compared with that of the adult, which are usually recited as predisposing the former to constipation.

The intestinal canal is relatively longer in the infant than in the adult. It contains a larger number of loops and coils and its caliber is relatively smaller. The infant's abdominal cavity, whose walls are yielding, is forced to accommodate a larger number of coils of intestines because of the undeveloped condition of the pelvis. The peristaltic movements are slight because muscular structure is undeveloped. The walls generally are thinner and weaker in the infant than in the adult.

Now it is well to know of these peculiarities, but the knowledge should furnish us with something better than an opportunity to nag at nature. As is very often the case, naked facts, such as are here furnished by the anatomists, have forced a false conclusion.

It is not by accident that an infant evacuates a smooth, yellow, homogeneous mass, thinner and relatively two or more times bigger by volume than the irregular sausage-shaped mass of varying color, which the adult normally passes. This difference in the character of the infant's stool is just what we should expect after considering the difference between his diet and the diet of the adult.

The infant's food is uniformly liquid, and its composition is more or less constant. Relatively the baby partakes of this more bountifully than does the adult of the long and interchangeable list of articles (liquid, semi-liquid, and solid), which goes to make up the latter's diet.

Nature is only able to perpetuate herself by conserving energy. Therefore she does not give to the infant a fully developed digestive tract, but she does give him that which is wonderfully adapted to his natural food and that which his natural food is capable of developing.

Because a great many constipated mothers have constipated babies, some have thought that they have seen another expression of hereditary influence. Constipation in the mother, however, or its causes, will produce just the changes in her milk that renders it constipating of itself. Her own baby is the one most likely to suffer, because he is the one most likely to be nursed. However, any other baby would suffer the same inconvenience on the same diet.

So far as the infant is concerned, the real causes of constipation are to be found only in the errors of hygiene or in errors of diet. Over-crowding, lack of sunshine, lack of fresh air may so interfere with the digestive processes and with the normal development of the child that irreparable injuries are produced.

The pernicious habit, not only prevalent among the poor and ignorant, but too often seen in homes where intelligence is otherwise perceptible, of so bundling and wrapping the infant with clothes that a heavy weight is placed on the abdomen and the normal exercise of limbs and abdominal muscles is prevented, is accountable for a large number of constipated babies. A too tight or resisting diaper may also be a factor in its production.

ERRORS OF DIET.

Errors of diet, to which constipation may be traced, are found in the method of feeding, in the composition of food or in both. Irregularity in the time of feeding and overfeeding usually accompany each other. The former interferes with the rhythm of the various stages of digestion, including bowel evacuation.

Distention from overfeeding materially affects bowel tone and embarrasses muscular activity. Insufficient nourishment will cause constipation immediately, by furnishing too little bulk of waste matter to supply the degree of resistance necessary to excite peristalsis; mediately by depriving the child of the necessary nutriment for development. Nourishment furnished in a too concentrated form will act very much in the same way.

Fat is normally supplied to the infant in excess of the nutritional needs proper. It is always found in considerable quantities in the normal stool and to its presence is due the soft, mushy consistency of the feces. Being nature's own laxative, it does not impair bowel tone or muscular activity, but only strengthens and develops them. A deficiency of fats in the food then will usually very promptly result in constipation.

The proteids, on the other hand, are almost all absorbed in their passage through the digestive tract. They are found in the feces in but slight quantities.

Now, if proteids are ingested in quantities much above the absorbing capacity of the bowel, the excess will form an unexpected residue. The same thing will result if the proteids are in a form illy suited to the absorbing function of the particular bowel into which they enter. In either case the residue is adventitious matter, difficult to propel, obstructing the bowel, weakening its tone, and producing constipation. If these errors of too low fat and too high proteid occur in the same milk, the result is all the more quickly evident and obstinate.

For the performance of the evacuating function a stimulus to peristalsis is necessary. Besides the fats already mentioned, this stimulus is furnished by bacterial fermentation, the acids, and the gases of the intestinal contents.

Strassburger's experiments have shown that the feces of constipation are almost free from bacteria, while normal feces abound in them. Two varieties of bacteria are constantly present in the intestinal tract of the infant. In the upper part of the small intestine the *Bacterium lactis aerogenes* is found in great numbers. It decomposes milk sugar, on which it depends for its growth, with formation of lactic acid and certain gases. As you note, these products of decomposition are some of the very forces acting as stimuli.

In the lower portion of the small intestine and throughout the large intestine, is found the *Bacillus*

coli communis, which, though depending on the secretions for its growth, when grown still further stimulates peristalsis and intestinal secretions. Ordinarily then, these bacteria are not only non-pathogenic, but are even desirable for furthering the performance of bowel functions. Because the one is directly and the other indirectly dependent on sugar for growth, a deficiency of this ingredient in food may result in constipation.

It has been found that farinaceous food will decrease the number of bacteria present, and it is as much by this property as by the residue it leaves, that this class of food has been found constipating to a great many children.

For the most part, constipation following the use of sterilized milk is due to the changes produced by heat on the proteids, whereby they are rendered less absorbable. Heat, however, produces several other changes in milk, which reinforce this constipating effect of the proteids. It changes at least a part of the sugar to caramel. It also destroys the chemical union betweeen the mineral salts and the proteids. This union is not an arbitrary arrangement on the part of nature, but is essential to proper assimilation and distribution of those parts entering into it.

The importance of the mineral salts in furnishing constituents to the blood and in facilitating absorption, secretion and excretion is now generally accepted.

I hope that, without taxing your patience, I have entered sufficiently into the etiologic details to assist in offsetting certain misconceptions as to the gravity of the significance of the disorder and the importance of early treatment.

In the course of our care-taking of children, we are wont to be so concerned with the more distressing and imperative symptoms coincident with other digestive disturbances that we give slight, or at most secondary consideration to the more insidious, but after lapse of time, none the less undesirable digressions from the normal, which, so far as we are warned against them, have their beginning in a condition of constipation.

IMPORTANCE OF PROPER FEEDING.

For a long time text books on the diseases of children either ignored the subject entirely or gave to it only a cursory, paragraphic mention. Present writers give to it some of the space which it deserves. But that there is still no inclination to give to the subject full consideration, can not be better illustrated than by pointing out to you that in the series of papers on infant feeding, read before this section last year, not only did the subject fail to win title, but was not specifically mentioned either in the papers or in the discussion.

There is a too general impression in the professional, as well as in the lay mind, that constipation need be interfered with, not for what it stands for, but only when it produces undesirable and uncomfortable symptoms of its own.

Too often the practitioner feels that his obligation to the child ends after he has found, by accident or experiment, a food which agrees with it. In ordinary acceptance, food which agrees means no more than one which does not provoke vomiting or excite diarrhea.

In fact, so unsure of their methods, so fearful of exciting diarrhea are some who are attempting infant feeding that they regard constipation as a desirable, rather than an undesirable condition.

It goes without saying that the members of this section have a better understanding, but when we consider the effect of what is said and of what is left unsaid here on that great body of physicians which looks in this direction for guidance, are we not, after all, responsible for their misconceptions?

We must teach that the baby must be carried, not dragged, through his infancy, and that he must be placed on the threshold of childhood in condition to enjoy his existence, which can be only after he has been furnished with all the nutriment necessary for his normal development.

Constipation does not cause rickets, nor scurvy, nor inanition, nor chronic indigestion, nor marasmus, nor anemia. Constipation, however, is the result of that which, if persisted in or allowed to be neglected, will cause one, and may cause any of these nutritional diseases. When we can gain a general recognition of the significance of constipation, preventive medicine will have taken a stride forward.

TREATMENT OF CONSTIPATION.

The treatment of constipation in the infant is then something more than the treatment of the condition itself. There is no more intelligence displayed in simply securing daily evacuations with medicinal stimulants and excitants of the bowel than there is in checking a diarrhea only to allow the absorption of the poisons producing it.

If the disorder is one resulting from unhygienic conditions, no amount of castoria or of castor oil or of nux vomica will better those conditions in the least.

If the diet is too high in proteids, the most liberal administration of salts, of suppositories or of enemas will not lessen the percentage of those proteids by the smallest part of a fraction.

The treatment of constipation is not a difficult thing if the condition is treated early and dealt with intelligently. A knowledge of the relationship between the feces and the ingesta and of an abnormality in the first pointing to the abnormality in the latter is prerequisite. Have we the right to attempt infant feeding at all without this knowledge?

General recommendations, such as are found in some text books, for the use of cream, of oatmeal, etc., are misleading and only show how carelessly the subject has been handled by otherwise capable authors.

Rational treatment denies routine in these cases, and demands primarily the finding of the cause. The cause, when found, suggests its own correction, which is the treatment of constipation in the infant.

If, however, the condition is neglected while the child is yet a young infant, treatment becomes an altogether different and more difficult question.

Before the contents of the bowel alone were at fault, but to this has now been added changes in the bowel structure itself, which can not be corrected by simply controlling the diet. It is for such cases that medicinal treatment is necessary, but even here great caution must be observed against abuse.

If the constipation is not of very long standing, atony of the bowel may be overcome, after correcting the diet, by an endeavor to establish habit. The simplest way of accomplishing this is by holding the child at regular hours, preferably after the morning and evening bottles, on a chamber in such a posture as to favor an evacuation. For the success of this method, regularity in feeding, because it favors rhythm in the stages of digestion, is necessary. If the bowel still remains obstinate a stimulus should be given. At the same time it should be recognized that this is unnatural and foreign

and that not only must it be slight as possible, but it must be withheld at the earliest possible moment.

Because no better method presents, I frequently advise the insertion, while the child is in posture, of an ordinary clinical thermometer, well oiled and used only for the purpose. Beside its simplicity and frequent success, it impresses the mother with the foreign nature of such a stimulus and the more readily does she dispense with its use. Soap and glycerin suppositories are to be avoided if possible.. Massage ought never to be practiced on the young child.

This paper is intended as a plea for the early correction of constipation and will not, therefore, outline any treatment for the neglected cases of this disorder

DISCUSSION.

DR. THOMAS S. SOUTHWORTH, New York City, said that the first step in the treatment of constipation in infants is to understand the underlying conditions. With nursing infants, the care of the mother and the regulation of her diet are important in relation to the constipation of the child.

DR. ISAAC A. ABT, Chicago, stated that the use of overfatted food, especially cream, which is commonly regarded as desirable in the treatment of constipation in infants, has actually been found at times to produce constipation and has led to the formation of scybala. The late Dr. Earle once made the statement that children were often constipated because the food they received was so perfectly assimilated that there was very little residue. Dr. Abt believes that constipation in infants may be due to a variety of causes. First, to the food itself; second, to the nature and quantity of the residue, and third, to a lack of muscular tone in the bowel. It may be the result of an atonic condition of any section of the bowel, or it may depend on a simple tonic constriction of the sphincter. Dr. Abt believes this is a frequent condition in infants. We have all seen cases where the mere introduction into the anus of a fever thermometer, or the point of a syringe or a bit of greased paper, has given rise to a stool of perfectly normal consistency. All that is necessary in these cases is the relaxation of the sphincter muscle.

DR. J. R. SNYDER believes that such children are underfed and that a child should have an amount of food in excess of the actual nutritional needs. The best way to determine the cause of constipation is by a close inspection of the stools. This will disclose just what the stool lacks.

PERINEPHRITIS IN CHILDREN.*

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The term perinephritis is used by most writers to describe an inflammation in the tissues surrounding the kidney. Schmid,[1] Prior,[1] Puky,[1] Senator[1] and Israel[2] would limit it to those cases where the disease originates in the fibrous sheath of the kidney. When it begins in the fat tissues they prefer the term paranephritis, except Israel, who designates such cases as epinephritis. Kuster[3] limits perinephritis to an inflammation of the anterior peritoneal covering of the kidney, and calls all others paranephritis. Under paranephritis Israel classes all inflammations beginning in the retronephric tissues.

This diversity of nomenclature rather tends to confusion than clearness, and in this paper all cases are spoken of as perinephritis.

Perinephritis is not of frequent occurrence. Nieden,[4] in 1897, could only find records of 166 cases. Of these, 23 were under 15 years of age, the youngest being five weeks old. Gibney,[5] in 1876, reported 9 cases, and in 1880 increased the total to 28. The ages varied from 1½ to 15 years. In 16 there was suppuration; in 12 no suppuration. In 19 cases no cause was found; in 8 a cause was given. Fenwick,[6] in a report on 76 cases, speaks of 4 in children under 10 years of age, and of 9 between 10 and 20 years, the youngest being 14 months old. He excluded from his list all of Gibney's cases, because none of them had been verified by postmortem findings. Kuster[3] rejects 16 of Nieden's list, and adds 80 cases, making a report on 230. Of these, 24 were under 10 years of age, 17 between 10 and 20.

Johnson,[7] in an experience of nine years in Roosevelt Hospital, saw but one case in a child, a perinephric abscess in a boy of 10, following a fall, not complicated by a kidney lesion. Israel,[2] in a report on 43 cases, speaks of one in a patient 12 years old. The 6 cases reported in this paper were all that were seen in children at the Hospital for the Relief of the Ruptured and Crippled, New York City, during the years 1894-1903, when 3,689 patients were treated in the indoor department, all under 14 years of age.

In no instance in the 6 cases reported from the Ruptured and Crippled Hospital was a correct diagnosis made by the attending physicians who first saw the patients, but all of them were sent to the clinic to have either spinal or hip braces applied. Gibney and others state that an erroneous diagnosis is made in over 50 per cent. of the cases seen. Only in rare instances should any difficulty arise in correctly interpreting the symptoms in a case of beginning perinephritis. After an abscess has formed the diagnosis is usually very easily made.

CLASSIFICATION.

In a consideration of perinephritis, the most simple classification is the division into primary and secondary, acute and chronic. Other classifications have been made, but they are unnecessarily elaborate. The best is that of Schmid,[8] who speaks of direct and indirect infections, with various subdivisions.

Under primary are classed all cases where the disease originates in the tissues about the kidney, the fibrous capsule, the fatty or areolar tissue, the fascia over the quadratus lumborum or psoas, the fascia about the diaphragm or in the peritoneum in front of the kidney.

The secondary comprises all diseased conditions of these parts following or secondary to diseases in other parts of the body.

Acute and chronic are used in the ordinary acceptance of the term. Fenwick[6] would add to the acute and chronic a latent type, to include those in which no physical signs are present pointing to suppuration near the kidney, or in which they are masked by more prominent manifestations of illness in other parts. In this class would be placed many of the pyemic cases.

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* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Diseases of Children, and approved for publication by the Executive Committee: Drs. S. W. Kelley, H. M. McClanahan and John C. Cook.

1. Herszky, Jena, March, 1903, Centralblatt für die Grenzgebiete der Medizin und Chirurgie.
2. Israel, Berlin, 1901, Chirurgische klin. der Nieren Krankheiten.
3. Kuster, Stuttgart, 1896-1902, Die Chirurgie der Nieren. Deutsche Chirurgie, 1897.
4. Nieden, Leipsic, 1878. Ueber Perinephritis hauptsächlich in Aetiologischer und Diagnostischer Berücksichtigung.
5. Gibney, New York, Amer. Jour. of Obstet. and Dis. of Child., vol. ix, 1876; Chicago Med. Jour. and Examiner, 1880.
6. Fenwick, London, Lectures on Cases of Difficult Diagnosis. Lancet, 1885.
7. Johnson, New York, Contribution to the Surgery of the Kidney. Annals of Surgery, 1899.
8. Schmid, Handbook d. Therapie Nieren Krankheiten, vol vi.

ETIOLOGY.

In most instances the etiology is obscure, but in many a definite cause is supposed to exist. Exposure to cold, a strain or sprain, a blow, a wound or fall on the side, constipation, excessive exercise of any kind, jarring of the body, overexertion, simultaneous infection of the perinephric tissues with other infections are among the causes that have been held to produce primary perinephritis.

The secondary may follow infection of any part of the body, and has been seen in all forms of kidney lesion, especially in pyonephrosis, pyelitis and stone in the kidney, or after operations on the kidney, ureters, bladder or urethra. It may follow or occur in typhoid and other fevers, in pneumonia, empyema, abscess of the lung or pleurisy, after the ulceration of a stone through the gall bladder or the rupture of an echinococcus cyst, in appendicitis or inflammations of neighboring organs within the thorax or pelvis, or after injuries of the kidneys,[9] etc. The acute cases come on suddenly, and most of the primary cases are of this character.

PATHOLOGY.

The pathology is an inflammation of the parts. Among the bacteria which may be found are staphylococci, streptococci, pneumococci, typhoid, tubercle or colon bacilli. Eighty per cent. of the primary cases end in abscess, and in the secondary an abscess is always found.

Where no abscess occurs the inflammation subsides more or less rapidly, and no trace may be left except, in occasional instances, a thickening of the part.

SYMPTOMS AND PHYSICAL SIGNS.

Symptoms.—The first symptom of primary perinephritis is usually pain, which may be very severe in character. It is most frequently felt in the region of the kidney near the vertebræ, but may be referred to the terminal filaments of the nerves and felt in the axillary line or even in front of the body. It may intermit and be mistaken for a neuralgia or lumbago, or extend downward and simulate a sciatica. Occasionally it is felt in the distribution of the anterior crural or obturator nerves. If constant it may be severe or dull in character, and pressure about the region affected generally increases it. As movements of the body tend to aggravate the pain, the spine is generally held rigid, and it is due to this fact that so many of the cases are at first mistaken for Pott's disease. A spine held stiffly often misleads the careless examiner, as the position assumed may tend to bring into prominence the spinous processes of the vertebræ, but to the careful observer this "position curve" is very different from the kyphosis of Pott's disease, the curvatures due to rhachitis or the beginning cases of rotary lateral curvature.

When psoas contraction occurs either before or after an abscess has formed or within the psoas muscle, flexion of the thigh results, and attempts to straighten the lower extremity cause pain, due to tension on this muscle, which may be referred to the hip, spine or pelvis. Very young children can not locate it definitely, and even those older are often uncertain where it is felt. This drawing up of the thigh by contraction of the psoas causes lameness and tilting of the pelvis, with consequent bending of the body to the affected side. This accounts for these cases being mistaken for beginning hip-joint disease, and the true condition overlooked.

As the disease is of an inflammatory type, chills or rigors, followed by fever and septic temperatures, are among the first symptoms, and are often severe in charter, and produce rapid depression of the vital forces. Rigors, septic temperatures and great general depressions, where a definite cause is not known, should suggest an examination for a perinephritis, even if other symptoms are absent.

Constipation is the rule, and its causation is variously ascribed to the patient's desire to avoid the pain of moving the body necessary to open the bowels, to pressure from the abscess on the intestinal tract, or to pressure on the sympathetic nerves. Diarrhea is very exceptional, and may be an early sign of pyemia. Vomiting is often present at the onset, but is of no special significance.

Examination.—A physical examination of the loins may show a dull note on percussion in the hypochondriac region over the affected area, and this is apt to increase as the abscess enlarges. The colon on the left side is in front of and on the right side to the inner side of the tumor, and over this a tympanitic percussion note may be elicited.

Abscess Formation.—With the formation of an abscess we have a tumor which may be felt, even when small, and which usually follows certain lines in coming to the surface.

It either points near the spine or in the hypochondrium or simulates a psoas abscess,[10] which may be described as consisting of four parts: 1, A somewhat narrow channel at its upper part in the psoas sheath; 2, a dilated sac in the iliac fossa; 3, a constricted neck under Poupart's ligament; 4, a dilated sac in the upper part of the thigh.

All psoas abscesses do not, however, pursue this course. The matter may leave the muscle above the crest of the ilium, and tracking backward, may point in the loin (lumbar abscess); or it may point above Poupart's ligament in the inguinal region; or it may follow the course of the iliac vessels into the pelvis, and, passing through the great sacrosciatic notch, discharge itself on the back of the thigh; or it may open into the bladder or find its way into the perineum.

It may burrow upward and pass through the pleura and lungs and be discharged through a bronchus,[11] or burrow downward and open into the vagina or intestinal tract.

The pus may have a fecal odor without any connection existing between the abscess and the bowel, as gases in debilitated patients may pass through the bowel wall. When a perforation of the kidney has occurred, a urinary odor may be noticed in the abscess.

Urine.—The urine may be of high specific gravity, high color, and may contain albumin and casts, indications of involvement of the kidneys, such as occurs in course of inflammations in other parts of the body. It is transient in character, not a permanent kidney lesion.

Blood.—The blood count shows an increase in the leucocytes, such as is found in abscess formation in other parts and in many inflammatory conditions. If tubercular in character, there will be no leucocytosis unless sepsis also exists.

9. Watson, Boston, Subparietal Injuries of the Kidney, Boston Med. and Surg. Jour., 1903.

10. Gray's Anatomy.

11. Loumeau: Jour. de Med. de Bordeaux, vol. xx, No. 41.

RELATION OF AGE AND SEX TO THE DISEASE.

The disease affects the sexes in about equal proportion and the same is true of the side affected. There is no reason why bilateral perinephritis may not occur in children, but I have found no recorded cases. Secondary bilateral cases have been reported by Turner,[12] Rayer,[1] Rosenstein,[1] Hitz,[1] and others in adults.

DIFFERENTIAL DIAGNOSIS.

The most common errors are to mistake perinephritis for beginning ostitis of the spine, Pott's disease, ostitis of the hip or hip-joint disease, or for acute osteomyelitis of the vertebræ. The absence of kyphosis, the rapid onset, the location of the pain, the rapid formation of abscess, high leucocyte count, with high temperatures, are symptoms rarely found in beginning Pott's disease, and the differential diagnosis is rarely difficult.

In hip-joint disease all motions are limited, in perinephritis only extension, and all are possible if the thigh is flexed. In hip-joint disease there is atrophy of the hip. An abscess rarely occurs in early stages, but if present, it is apt to be near the joint, not near the spine. The onset of hip-joint disease is usually slow, and the first symptom is generally lameness, the leucocyte count is not increased until suppuration occurs, and pain is apt to be referred to the knee or hip. In but rare instances will any difficulty be found in making a proper diagnosis.

From psoitis in some cases a positive diagnosis can not be made. The principal points to remember are that psoitis is more rare, abscess is infrequent, pain is apt to extend along the course of the psoas and iliacus and to be felt in front rather than behind, and that psoas contraction or thigh flexion is a very early symptom. Undoubtedly some of the reported primary cases of perinephritis where no suppuration occurs are cases of psoitis, although suppuration may occur in inflammation of muscle.

In acute infectious osteomyelitis of the vertebræ, the pain is felt in the spine, most severely in the affected area, with local spinal tenderness. The last symptom is of great value, and is absent in perinephritis. With involvement of the nerve root within the spinal canal, we have lancinating pains which extend in front. These are usually more severe than the pain in perinephritis, but this symptom may be misleading. Dural symptoms may appear early, and pressure on the cord cause compression symptoms. These are absent in perinephritis. The septic symptoms would be the same in both.

The abscess tumor may be mistaken for an enlarged spleen, liver or kidney, or for an aneurism or appendicitis, but proper study of the symptoms will rarely leave one in doubt as to the true condition that exists.

The treatment should be based on the conditions present. If seen early, rest in bed, tonics, laxatives and mild stimulation are indicated. If an abscess is present, prompt surgical interference is demanded. Failure to promptly open a collection of pus may mean death from sepsis or burrowing into other parts, with formation of sinuses and long delay in recovery and serious complications.

A study of the reported cases in the literature clearly shows that the tedious convalescence, the formation of abscesses in other parts secondary to the perinephritis and the deaths were largely due to failure in making an early diagnosis and to indefinite surgical procedures after the diagnosis had been made.

In the cases treated at the Hospital for Ruptured and Crippled Children, no deaths have occurred. In primary perinephritis the death rate should be very low, if cases are properly treated; in secondary it will depend on the primary site of and character of the infection.

Watson[9] found perinephritic abscess the cause of death in 56 of 81 fatal cases of subparietal injury to the kidney treated expectantly, but in 99 uncomplicated cases treated by operation other than nephrectomy, in 21 cases of perinephritis there was but one death. The cause of perinephritis and the treatment both influence the mortality rate.

REPORT OF CASES.

CASE 1.—Male, aged 13; admitted to hospital Nov. 27, 1903. Family history negative. Was perfectly well up to two weeks ago.

History.—In July he had a chair pulled from under him, slightly injuring his back, but he fully recovered. In September he fell from a bicycle, but did not hurt himself. Two weeks before admission he lifted a heavy box and the next day suffered intense pain in the back and had a chill. The pain was excruciating and paroxysmal in character and confined to the right side of the spine. About a week later it extended downward toward the hip and was felt in front of the abdomen. He was constipated and the bowels were finally moved by the use of salts. After the chill he had fever, and three days later was delirious. A physician who was called at this time was unable to make a diagnosis, but pronounced it hip joint disease when one week after onset the thigh became flexed and was held constantly in that position. After the first few days vomiting was present and persisted, until after admission to the hospital. Boy lost flesh rapidly and had a daily chill and fever for over two weeks.

Examination.—On admission, rectal temperature was 101 degrees, pulse 88, respirations 18. He was pale and evidently suffering pain. The right thigh was flexed on the abdomen; extension beyond 90 degrees was impossible. No disease of hip or spine made out. Deep pressure in region of kidney caused pain.

Urine amber color. Sp. gr. 1020. No sugar or albumin.

Abdomen retracted, no signs of peritonitis. Leucocyte count 14,000.

Treatment.—Treatment was rest in bed and milk diet.

Result.—Symptoms gradually subsided. Leucocyte count December 5 was 7,500. Flexion of thigh had disappeared, and on December 12 he was discharged cured.

Feb. 15, 1904, he was seen in the out-patient department and was perfectly well; could walk or run as any other boy, and was gaining flesh rapidly.

CASE 2.—Male; aged 6½; admitted to hospital July 22, 1903. Family history negative. Has had none of the diseases of childhood.

History.—Was perfectly well until one week before admission, when he complained of pain in the left side, very severe in character and worse at night. No cause known. Had chills, followed by fever; lost flesh; appetite failed. The family physician first made a diagnosis of malaria, then of hip disease, and sent the patient to the hospital for a brace.

Examination.—Examination on admission showed general condition poor; rectal temperature, 102.8 degrees. A large, fluctuating tumor was easily made out in the lumbar region, presenting two inches to the left of the spine, midway between the crest of the ilium and the last rib.

Treatment.—Abscess was opened, careful examination made and no disease of spine was found.

Result.—August 19, discharged cured. February 14, 1904, seen at his home; was perfectly well.

CASE 3.—Male; aged 11 years; admitted to hospital, Oct. 29, 1902. Family history negative.

12. T. R. Hunt: Med. Record, April 23, 1904.

History.—The first symptom noticed was pain in the back near the spine; the child held himself bent over when he walked. He lost weight and had chills, followed by fever. No cause known. The family physician made a diagnosis of hip disease and sent him to the hospital for a brace.

Examination.—Examination on admission showed boy in poor physical condition. The left thigh was flexed on the abdomen, and could not be extended beyond 90 degrees. No evidence of disease of spine or hip. In left iliocostal space a fluctuating tumor was easily made out,

Treatment.—This was opened, drained, and patient was discharged cured on November 24. February 15, 1904, seen at his home; was perfectly well.

CASE 4.—Female; aged 6 years; admitted to hospital Nov. 12, 1903. For two weeks prior to admission she had pain in the back, with chills, followed by fever. No known cause. The family physician sent the child to the hospital for a brace for Pott's disease.

Examination.—On admission the rectal temperature was 104 degrees; there was incontinence of urine, sensitiveness to pressure in the right lumbar region, marked stiffness of the lumbar spine. Pain was increased when the child bent to either side. Bowels regular; no tumor felt.

Two days later the parents removed the child from the hospital. At that time the temperature was lower and the general condition improved.

February 12, 1904. Seen at her home and condition found to be perfect.

CASE 5.—Female; aged 3; seen in out-patient department Sept. 27, 1901.

History.—For two weeks had been complaining of pain in the back and walked lame. No cause known. Had chill, followed by fever.

Examination.—A fluctuating tumor was found to the left of the spine in the lumbar region; marked psoas contraction; thigh held flexed on abdomen; constipation; passes but small quantities of urine daily. Temperature in axilla 100 degrees.

Treatment.—Three days later at the hospital the abscess was opened, and one month later entirely healed. Feb. 15, 1904. Seen at home; perfectly well.

CASE 6.—Female; aged 5 years; admitted to hospital Dec. 5, 1898.

History.—In July she was run over by a wagon, but the superficial wounds healed, and she was apparently well, but two months ago she began to get lame.

Examination.—General condition was poor; abdomen prominent, also third and fourth lumbar vertebræ. Muscular spasm and rigid spine. Distinct abscess was found in the right pelvis, psoas contraction; thigh flexed on abdomen.

Treatment.—December 18, aspirated, and two ounces of greenish pus were withdrawn; December 22, aspirated and seven ounces withdrawn. Temperature, 100 to 102 degrees.

December 26, abscess was opened, and on Jan. 17, 1899, a counter opening was made between the ribs and pelvis and free drainage established between this and the opening in front.

Dec. 26, 1899. Posterior opening was closed; one into the pelvis in front still discharging.[13]

DISCUSSION.

DR. R. B. GILBERT, Louisville, mentioned two cases in which this condition was mistaken for disease of the vertebra, and said that the knowledge of the facts in regard to perinephritis in children should aid in the diagnosis of this condition, which is so frequently overlooked.

DR. A. JACOBI, New York City, considered that Dr. Townsend did not lay sufficient stress on the possibility of constipation being a cause of the condition in children, just as it is in the adult. It is due, not so much to the pressure produced by the dilated colon, but to the stagnation of the feces, producing inflammation of the colon and subsequent infection. Dr. Jacobi has no doubt that in the adult Dr. Townsend has seen many just such cases. In some cases that have come under Dr. Jacobi's observation, obstinate constipation of many years' duration was the cause, or one of the causes, of the perinephritis. He could only recall four cases of this condition in young children, two in children perhaps 2 or 3 years old, the other two in older children. In the latter cases the perinephritis was on the right side; in the younger children on the left side. Constipation takes place in very young babies particularly about the left curvature, just in or above the sigmoid flexure; particularly in those which he has described as "congenital constipation," which depends on an exorbitant length of the sigmoid flexure. In older children, in whom the ascending colon is longer than in the newly born, the constipation may take place in the right curvature, and this happened in the cases that came under his observation.

DR. W. R. TOWNSEND said that he had recently seen two cases of perinephritic abscess in children and both had been mistaken for hip-joint disease.

13. Since the above was written the author has seen two additional cases in children of 3 and 4 years of age, one mistaken for hip-joint disease, the other for spinal disease. Abscesses were opened and drained and both cases made perfect recoveries.

Clinical Notes.

RESPIRATORY PITCH.

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Those who write their opinions on medical subjects, unsupported by reasons or experiments which can be put to the proof by any competent person, and those who write the "one consecutive case" articles may usually be considered bores. My justification for asking a hearing is based on something more definite than personal opinion, something which can be confirmed by evidence sufficient to prove a case in the courts. As a preliminary I will ask the reader's indulgence in the relation of a personal experience which may have a certain value to those interested in auscultation.

Thirty-six years ago the teaching as to the pitch of respiratory sounds was the same as that of to-day. At that time it was my privilege to receive instruction in auscultation under a talented pupil of Dr. Austin Flint. Through personal experience of pulmonary disease my interest in becoming expert was great, but my first experience as a pupil was discouraging. The current teaching as to pitch did not coincide with the evidence of my ear.

After referring to my instructor a number of patients in whose chests the expiratory sounds were lower than the inspiratory, and being told that I was in error, I feared for some time that my peculiarity would be fatal to proficiency as a diagnostician in pulmonary diseases. I had confidence in my ability to detect slight differences in pitch, but that confidence did not carry me to the extent of setting up an unsupported opinion against that of the experts in the profession. After many discouraging attempts to master the subject, I learned that ability to detect morbid sounds was not lessened by inability to define the pitch in the terms of the accepted authorities.

After thirty-five years, in which auscultation has been practiced daily, and the correctness of early impressions in this particular have been confirmed, it is a satisfaction to read what Dr. Quimby stated in his paper in THE JOURNAL, Oct. 1, 1904. The following evidence is worth considering, and any physician can multiply the tests to any desired extent on the same lines. Musicians use the term "positive pitch" to designate a faculty which seems incredible to one who does not possess it. Those persons who have it can, unaided by any sense except that of hearing, name any note sounded on a piano. The evidence of persons having "positive pitch" should have great weight in settling the question of the pitch of respiratory sounds.

Several of my patients and friends have this faculty, and having tested their ability to hear and describe the sounds heard through a stethoscope placed over the trachea and also over different parts of the chest, and finding their evidence unanimous, that inspiration is of higher pitch than expiration, it seems to me that an unbiased jury would render a verdict in

accordance with the evidence, without hesitation. Doubtless many physicians are proficient in auscultation whose sense of hearing would not enable them, either from natural defects or erroneous training, to decide this question correctly. A better foundation can be laid on truth than on error, and more men will become expert in auscultation when to every factor is assigned its correct position and value than when an error complicates the problem. It would seem that a correct settlement of this question is not only of interest but of importance, and that it may be settled to the satisfaction of all by the kind of expert testimony cited.

RHEUMATISM TREATED BY VENESECTION AND HYPODERMOCLYSIS.

C. G. HARRIS, M.D.
FESTUS, MO.

A man, aged 26, English, bricklayer by occupation, has had rheumatism at varying intervals since he was 15 years old. His father is in good health, but drinks a good deal. Mother is extremely "nervous." The patient complained of lameness and rheumatic pains which had persisted for the last four months. The right shoulder, wrist, knee and ankle joints were swollen and painful. Temperature was 103, pulse 96. His tongue was heavily coated and his breath bad. He complained of headache. The urine was of dark red color, high specific gravity and acid in reaction. Calomel and saline cathartics were given to clean out the intestinal tract. As the usual anti-rheumatic remedies failed to give relief and anodynes seemed to have no effect on the pain, venesection was performed and about twelve ounces of blood were withdrawn. Following this, two pints of normal salt solution were injected beneath the skin of the breasts. All pain (except a slight soreness) had disappeared in less than two hours. Temperature dropped to normal and pulse to 80. Two hours later the pulse was 72. Recovery was uneventful and so far (four months later) there has been no recurrence.

New Appliances.

A SUPPORT FOR PATIENTS SUFFERING WITH WEAKNESS AND PAIN AFTER THE ARREST OF TUBERCULOSIS OF THE SPINE.

JOHN JOSEPH NUTT, M.D.
Assistant Attending Surgeon, Orthopedic Department of Cornell Dispensary.
NEW YORK CITY.

The relief from weakness and pain, which sometimes remain persistently after all the acute symptoms of tuberculosis of the spine have disappeared, may severely tax the ingenuity and skill of the orthopedist. Because of this fact, this apparatus is presented with the hope that it may be of value to the profession. No originality is claimed, except for the ensemble of its parts, which are taken from well-known braces and applied to a leather corset. This combination, however, proved so serviceable in this instance that others may profit by copying it, in whole or in part.

Patient.—S. F., aged 27, of Caracas, Venezuela, had developed Pott's disease during early childhood. Until his tenth year he was so weak and sickly that he was not expected to live. He then began to improve, and for the following eight or ten years enjoyed comparatively good health.

History.—During the past ten years he has suffered a great deal from pain and weakness, and three years ago he was forced to give up every form of exercise. After several months in bed he gained enough strength to sit up and walk about to a limited extent. The actual cautery had been applied at frequent intervals during the last year and gave slight but temporary relief from the pain. He had also been placed in a Sayre's suspensory apparatus a number of times last winter; with just what object is not known.

Examination.—Physical examination showed a most pronounced kyphos in the lower dorsal region. No symptoms of an acute process could be found, although it seems highly probable that there had been an exacerbation of the disease about three years ago. The heart and lungs appeared to be normal.

Figure 1.

Figure 2.

He came to New York because he still suffered from pain and weakness. The pain was felt on either side of the kyphos and along the costal borders, especially the right. This pain was not usually present while lying down, but became more marked the longer the time he remained in an erect position. He could

walk but a few moments without being compelled to rest, and even standing quickly fatigued him.

Diagnosis.—A diagnosis was made of intercostal neuralgia and weakness from deformity. It seems probable that the vertebræ, though ankylosed, had been too far disintegrated to form a spine of sufficient strength to support the well-developed shoulders and chest.

Treatment.—A plaster-of-paris jacket was applied with the patient in extension, and, by giving some relief, gave encouragement. A stronger plaster was then applied, but did not fill all the indications. After considerable study and experiment-

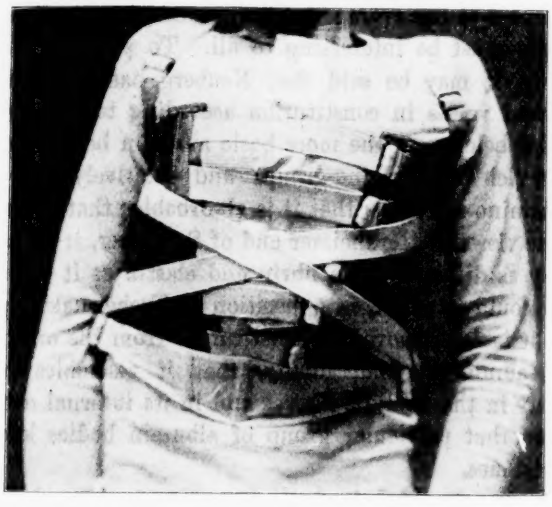


Figure 3.

ing, the apparatus here shown was devised and applied. (Figs. 1 and 2.) The patient wore it to St. Louis on a visit to the Fair, and on his return pronounced it very successful.

He had been able to walk about for several hours at a time without once sitting down. Except for a slight change in the leather beneath one shoulder, no alterations were made.

As it was difficult to get sufficient leverage to obtain the necessary support, the crossed straps were used extending from the ends of the pelvic band to the upper part of the crutch on the opposite side. (Fig. 3.)

A NEW INHALER FOR NITROUS OXID ETHER SERIES.*

SAMUEL IGLAUER, B.S., M.D.
CINCINNATI.

Purpose.—The advantages of nitrous oxid as a preliminary to ether are well known and require no particular commendation. Suffice it to say that nitrous oxid followed by ether combines the elements of safety, rapid and pleasant narcosis, avoidance of the stage of struggling and excitement, and a great reduction of the quantity of ether necessary for the induction and continuation of the anesthesia. Various apparatus have been devised for this series. Many, however, are rather cumbersome, complicated and expensive.

Construction.—The inhaler which I have devised for the administration of nitrous oxid and ether consists of a closed metallic face-piece, provided with an inflatable rubber cushion, accurately fitting it to the patient's face. On top of the face-piece is a detachable glass and metal ether-container, from which a visible supply of ether may be fed in definite quantities as desired. (Modification of Brown's ether container.) Within the face-piece is a wire basket for the gauze, on which the ether is allowed to flow.

An L tube telescopes at one end with the face-piece. To the other end of the tube is attached a large rubber bag for the nitrous oxid gas. To prevent the gas from escaping until desired, the tube contains an obturator valve, controlled by a small lever, which projects through the air slot in the tube. This is the only valve in the apparatus, and acts simply as a cut-off.

A large ring for the thumb enables the anesthetist to hold the face-piece, and to support the angle of the patient's jaw with one hand. On the side of the face-piece are two openings, through which air may be admitted or ether poured, if desired. If the ether-container be removed, the ether may be poured from a bottle, directly on the gauze.

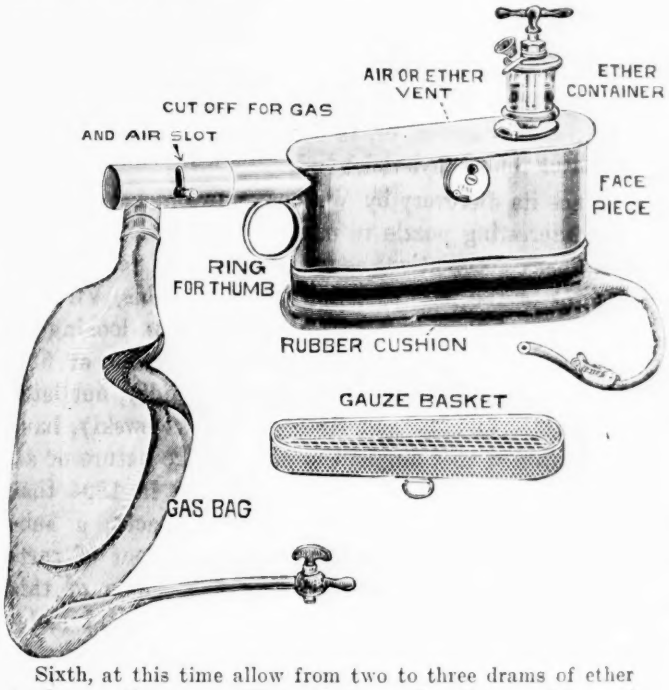
Use.—To use the inhaler, first, loosely fill the wire basket with gauze.

Second, fill the ether-container with ether (about one ounce).

Third, inflate the gas bag with nitrous oxid from a cylinder containing the gas. (This cylinder must have key, yoke and tubing, which may be obtained at any supply house.)

Fourth, apply the inhaler to the patient's face and instruct him to breathe through the mouth. Admit air through the air slot, until the breathing is regular and the patient reassured.

Fifth, now turn the lever freeing the gas and shutting off the air. Allow the patient to breathe the gas back and forth into the bag. In about forty to sixty seconds nitrous oxid narcosis will ensue.



Sixth, at this time allow from two to three drams of ether to flow on the gauze. The patient now breathes a mixture of nitrous oxid, ether and carbon dioxid from his own lungs.

Seventh, admit a breath or two of air if the patient becomes cyanosed or if the breathing is stertorous.

Eighth, allow ether to flow on the gauze from time to time until ether anesthesia is established. This usually requires three minutes.

Ninth, remove the large rubber bag and slide on the smaller one (provided with the outfit), continuing the anesthesia with the closed or Clover method, air being admitted from time to time as necessary. By removing the bag we can change to the open method if desired.

For the administration of nitrous oxid alone the inhaler is provided with a three-way valve, modified after Goldan's. The inhaler may be used for ethyl chlorid by closing all the vents except one, through which ethyl chlorid may be sprayed on the gauze. For ethyl bromid, all vents are closed, and after pouring the bromid directly on the gauze, the inhaler is applied to the patient's face until anesthesia ensues.

The inhaler combines the qualities of lightness, compactness, convertibility with simple construction. The metal parts may be sterilized by boiling, while the rubber parts are best cleansed with alcohol.

* Demonstrated before the Section on Surgery and Anatomy at the Fifty-fifth Annual Session of the American Medical Association, and approved for publication by the Executive Committee: Drs. DeForest Willard, Charles A. Powers and J. E. Moore.

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CHEMISTRY OF AMYLOID.

Before the era of aseptic surgery, amyloid disease was one of the commonest conditions met with by hospital physicians and surgeons, but now that chronic suppuration has become rare, the frequency of amyloid has been greatly diminished. Still, one sees it occasionally, especially in old syphilitic cases, or in connection with advanced tuberculosis; the clinician recognizes the enlarged liver and spleen, and looks for the characteristic pale urine with its large amount of albumin; the pathologist, even more frequently, demonstrates the presence of amyloid at autopsy, finding the waxy liver and the sago spleen, or, in sections, using the iodin reaction or the methyl-violet test.

Since its discovery by Virchow, amyloid has been an ever-interesting puzzle to medical men, and there have been many speculations as to its origin and nature. On account of the iodin reaction which it yields, Virchow was inclined to regard it as a carbohydrate, looking on it as a sort of animal cellulose, but analyses, at first crude (Friedereich and Kekulé, C. Schmidt), but later more exact (Kühne and Rudneff, Modrzejewski), have demonstrated that amyloid is more of the nature of an albuminous substance. Oddi's discovery in 1894 that amyloid contains chondroitin-sulphuric acid, a substance known to be an important constituent of cartilage, and Krakow's proof of the firm union of this acid with the albuminous part of the amyloid molecule, probably in the form of an ester, led many to hope that the question of amyloid formation might be quickly solved. It seemed rational to suppose that a general metabolic disturbance, causing the cachexia and marasmus preceding the amyloid degeneration, resulted in the transportation of chondroitin-sulphuric acid into the diseased organs, where it accumulated, irritated the tissues and caused the formation of amyloid. Experiments (Oddi, Kettner) undertaken in support of this hypothesis yielded, however, entirely negative results, and there would seem, therefore, much more to be expected from a study of the albuminous part of the amyloid molecule, especially as the chondroitin-sulphuric acid component is relatively small. Unfortunately, up to this year we have remained practically ignorant of the essential nature of the albuminous part of amyloid, the only observations earlier made having been those of Modrzejewski, through which the presence of leucin and tyrosin in the molecule was made probable.

In view of the great progress now being made in albumin chemistry, thanks to the initiative of men like Kossel, Fischer and Hofmeister, it is not surprising that attention has recently been redirected to the structure of the albuminous part of amyloid. Neuberg, in Orth's laboratory, has carefully examined purified amyloid by the most modern methods, and has arrived at some highly important and interesting results. The details of the research are chemically too abtruse to be presented to the average medical reader, but the general results must be interesting to all. To put these most briefly, it may be said that Neuberg has shown that amyloid varies in constitution according to its origin; that it belongs to the more basic albumin bodies, being very rich in diamino-groups and relatively poor in monamino-nitrogen; that it is absorbable; that contrary to the views of Herxheimer and of Schrötter, it is chemically as different from fibrin and elastin as it conceivably could be; that, in opposition to Tschermak's opinion, it is far removed in constitution from the ordinary body-albumins; and, finally, that it resembles most closely in the analytic figures and in its internal constitution that particular group of albumin bodies known as histones.

We are justified in believing, as a result of Neuberg's investigations, that amyloid results from the transformation of albumins in the body in the way that more acid molecules are transformed into more basic ones through the introduction, gradually, perhaps, of an increasing number of diamino-groups. Just as there is, as Miescher demonstrated, a gradual increase in the basic properties of the albumins in the developing testicle with culmination in those very basic substances, the protamins, so a somewhat similar metamorphosis may, Neuberg thinks, under certain pathologic conditions, lead, in the liver, spleen and kidney, to the formation of amyloid.

These results are, of course, still very far from clearing up the obscure questions connected with the origin of amyloid. They do represent, however, a good step forward in our knowledge of its nature, for, though hydrolysis indicates that the amyloid molecule is far more complex than that of a relatively simple protamin, it seems likely that a "protamin nucleus" occupies a very dominant position in it. It is now highly desirable that those who have the opportunity to do so should examine different amyloids varying in their age and origin, with the hope of gaining an insight into the exact stages of metamorphosis through which the albumins from which amyloid arises pass.

BORIC ACID AS A FOOD PRESERVATIVE.

At the meeting of the New York Academy of Medicine, held November 17, Dr. H. W. Wiley, the chief of the Bureau of Chemistry of the United States Department of Agriculture, made a formal preliminary re-

1. Neuberg, C.: Ueber Amyloid. Verhandl. d. Deutschen pathol. Gesellsch., Jahrg. 1904, No. 1, pp. 19-32.

port with regard to the effect of boric acid and borax when used as preservatives in food. So much has been said in the newspapers pro and con on this subject that it is very interesting to have the definite results of the government investigation given by the investigator in charge. The report is a model of judicious and temperate weighing of the elements of a difficult problem, and the conclusions are not emphasized, but rather suggested. They are eminently calculated to do honor to those who have had the investigation in charge, and will doubtless prove definite landmarks in our knowledge of this extremely important subject.

According to the German investigators, borax and boric acid, given in large doses, always cause severe nausea and vomiting, and their use is followed by great depression, and, of course, by loss of weight and strength. Such marked effects were not found by the American investigators, either when the boron derivatives were given in large doses over short periods, or in small doses over long periods. Dr. Wiley points out one possibly important reason for this difference of opinion, in the fact that the German investigators were asked to make their studies with the definite purpose of justifying the German Government in certain legal measures that had already been enacted, for the exclusion from Germany of foodstuffs preserved by means of boron compounds. The problem is not so easy of solution as might seem at first sight, and the bias inevitably created in the investigator's mind by the previous action of his government would undoubtedly prove sufficient to turn the scale of judgment and vitiate the value of his experimental conclusions.

The main results that were found were first an inhibition of the elimination of nitrogen; that is, the men under observation who were taking boric products excreted less nitrogenous material than they did while taking the same amount of food of the same nature, in a preliminary set of observations, before the administration of these substances was begun. In a word, the boron derivatives prevent the tissues of the body from breaking down, and so prevent them from keeping in that renewed youthful condition which the frequent reproduction of cellular tissues insures. If all the tissues can be kept young, then there is no senility. If worn-out tissues are prevented from breaking down, however, then senile change is advancing. Hence the use of these food preservatives can not be otherwise than inimical to health. On the other hand, more phosphoric acid is excreted than is normal for the amount and character of food taken. This means that the bones are being disintegrated.

A very interesting phase of the investigation was that which showed that wherever albumin, not nephritic but physiologic, was present in the urine of the individuals on whom the observations were made before the ingestion of boron products was begun, it was increased to a notable degree during the time of administration. A curious commentary on this is the fact that the boric acid and borax are excreted, not through the feces, as might be expected, but almost entirely through the kidneys. At least 80 per cent. of the amount ingested can be found in the urine, while the remaining 20 per cent. is excreted in the perspiration.

In the discussion it was pointed out that in recent years there has been a marked increase in the number of cases of nephritis in this country, and that it is not at all unlikely that the free use of such preservatives in food has been an important factor in this sad state of affairs. Certain it is that with the strain that is put on the kidneys by the tendency, so marked in modern life, to overeat, especially of nitrogenous material, the extra effort required for the excretion of such foreign materials as the boron compounds is likely to work serious harm if continued over long periods.

The conclusions, then, while not absolute, are very definite. All metabolism is disturbed by the constant use of such food preservatives. All the individuals experimented on lost weight. As was pointed out in the discussion, small doses of boric acid constitute one of the best antifats that we have, and the only one that has sustained its reputation in the hands of conservative observers. To permit its general use, then, is to invite evil. While it is not a serious poison, it is a dangerous substance. Laws should be so constructed that all food materials in which such preservatives are employed must bear a label to that effect. There may very well be times when the slight danger involved in the temporary use of such preserved foods may be preferable to the greater risk of consuming food materials that have begun to spoil. Consumers must be allowed to choose for themselves in this matter. Physicians, however, must certainly take the side that it is better to avoid such suspicious substances than to run the risk of metabolic disturbances, with possible nephritis at the end, that may follow their prolonged use.

THE PROPHYLAXIS OF MALARIA.

Since it has been demonstrated that the malarial fevers are due to an animal parasite transmitted from one person to another through the intermediation of certain mosquitoes, it can be comprehended that the only connection between malaria and bad air resides in the fact that emanations from decomposing vegetable matter take place under conditions that favor the propagation of the intermediating mosquito. In view of the facts as they have been demonstrated, it should be scarcely, if at all, more difficult to eradicate malaria than it has been possible so to do with yellow fever in Havana. Indeed, the task should be even simpler, inasmuch as in quinin we possess a specific remedy against the disease that has also considerable prophylactic value.

The means of prevention based on the known facts must consist (1) in the vigorous treatment of all individuals suffering from malarial fevers, thus eliminating sources of infection; (2) in destruction of the parasite-

bearing mosquitoes; and (3) in case of failure to destroy the mosquitoes, in protecting healthy persons from their bites. A most interesting discussion on this subject was held in the Section of Tropical Diseases at the meeting of the British Medical Association, recently held at Oxford, and was participated in by a number of experts, who spoke authoritatively from personal observation.

Dr. J. W. W. Stephens[1] laid emphasis on the fact that only certain species of anopheles acted as the intermediate host and carrier of the malarial parasite, and that the species varied in different localities. In conformity with this fact, the measures to be employed for the eradication of the breeding places of the pathogenic mosquito will vary in accordance with the species and its individual habits. In contradiction of a somewhat prevalent fallacy Stephens and Christopher found that the normal flight of anopheles is a matter of only some hundred yards and not miles; and the intensity of infection and the danger therefrom grow gradually less as the distance from the breeding grounds increases, disappearing ordinarily at a distance of about one mile.

The methods of prophylaxis to be enforced are (1) antilarval; (2) mechanical; (3) medicinal, and (4) segregatory. The first consists in systematic drainage, as a result of which the breeding places of the larvæ are removed. Petrolage, or the covering of the surface of collections of water with petroleum, can be considered only as a temporary expedient and not as an ultimate means of eradication. Mechanical prophylaxis consists in the use of wire screens, mosquito netting, veils, gloves and similar means of preventing the access of mosquitoes to both the sick and the healthy. Medicinal prophylaxis consists in the administration of quinin in suitable dosage to individuals exposed to the danger of infection with malaria. Finally, separation of the sick from the well has been recommended in tropical countries, with the object of avoiding such exposure.

Only by the intelligent application of the foregoing measures is it possible to diminish on any large scale the prevalence of the malarial fevers and evidence is not wanting of their practical efficacy.

THE FUNCTION OF THE CECUM AND APPENDIX.

The large amount of study which has been applied to the vermiform appendix in the last ten years has had to do, in the main, with the surgical aspects of this organ. It is true that the widespread recognition of the importance of this structure in human pathology has led to a restudy of its anatomy and pathology, but the physiology has been greatly neglected. In his recent Huxley Lecture Macewen[2] calls attention to these facts: He states that, as a rule, the appendix is described as a rudimentary organ, and that some writers regard even the cecum as a useless inheritance derived from our prehistoric ancestors. He comments on the modern tendency to regard organs whose functions we do not fully understand as useless organs, and the resulting idea that it is of benefit to remove such organs, even when not diseased, when they are exposed by operations done for other purposes. He suggests the improbability that Nature has constructed our bodies so faultily that it is necessary for us to patch and trim them, as is often suggested and occasionally done. He then attempts to show that the cecum and appendix have useful functions, and are not the useless structures that the appendectomaniacs would have us believe.

He considers the subject first from the comparative view-point, and shows that the relative importance of the stomach and the cecum in the digestive process is determined by the kind of food on which the animal lives. In carnivorous birds and animals, most of the work of digestion is done by the stomach, and the cecum is small or rudimentary; in herbivora, on the other hand, the cecum is enormously developed, and in certain species, the solipeds, the cecum is the chief digestive organ. This suggests, Macewen states, that man, who is both carnivorous and herbivorous, should possess not only a stomach, but also a cecum, and this is indeed the case. The relatively small size of the cecum in man can be explained by the fact that the vegetables which he consumes are soft and relatively easily digested.

Observations on human beings which bear on the function of the cecum and appendix have been obtained as a result of injury or of operation, and are necessarily somewhat fragmentary. The effects of fecal fistulæ occurring at various levels in the intestines have shown in a general way that the nearer a fistula is to the stomach the more pronounced are the symptoms of malnutrition. Where a fecal fistula is situated just above or in the cecum, provided in the latter case that the opening be large, a certain amount of interference with nutrition results. In patients in whom the cecum has been removed the digestive processes are practically never normal, and all of these cases have to live on a special diet. In the few cases in which an opening in the cecum has existed which was large enough to allow of easy inspection, certain interesting occurrences have been observed. It has been noted that certain definite movements occur in the cecum as a result of stimulation by food, and it has also been noted that one or two hours after the introduction of food into the stomach there is a considerable secretion of mucus by both the cecum and the appendix. Then, too, it has been noted in such cases that the ileocecal valve allows only the intermittent passage of the chyme, a circumstance which would favor its admixture with the cecal and appendiceal secretions. Anatomically, the situation of the valve opening just above the appendiceal opening, the dependent situation of the cecum, and

1. British Med. Jour., Sept. 17, 1904, p. 629.
2. Ibid., Oct. 8, 1904.

the presence of large numbers of follicles of Lieberkühn in the cecum and appendix, all speak for something more than a mere mechanical action.

The bearing of these facts on appendicitis Macewen merely touches on, and in this part of his paper he really brings out nothing which we had not already learned empirically. The relation of appendicitis to digestive disturbances and the preventive measures which logically suggest themselves were already sufficiently obvious. The first part of the paper, however, is very suggestive, and should be read by the surgeons and gynecologists, and especially by those who advocate removal of the normal appendix, whenever an opportunity offers.

MEDICINE AS APPLIED SCIENCE.

It can scarcely be too often emphasized that the science of medicine consists almost entirely of applications of the principles and methods of other sciences, natural and mental, to the study of disease. The principles of natural science, especially, form the skeleton on which the great masses of medical facts are hung. Medical men sometimes forget that it is the methods of physics and chemistry that they are using every day, and that it can scarcely be otherwise in their work. Everyone knows, when he stops to think of it, that physics and chemistry are more fundamental or basal sciences than biology, just as mathematics is a science more fundamental than physics.

The ophthalmologist, fitting a pair of spectacles or examining a fundus, and the microscopist, making his observations through the wonderful instruments with which we are familiar, have to be reminded that their work is largely applied optics. The clinician percussing the chest or listening to the sounds of the heart, is seldom conscious that he is working in the field of applied acoustics; nor does he realize that he is performing a simple experiment in hydrostatics when he makes a blood-pressure reading, or that he is making a physical measurement when he takes a patient's temperature. Analyses of the urine and stomach juice are now such distinctly medical operations that their relations to purely chemical procedures are often lost sight of. In an applied science, such as medicine, except that part of it which deals with problems of coördination, almost wholly is, the applications have to be made from sciences which are more fundamental, more nearly primary or elementary, more all-inclusive, and these are, in progressively more fundamental sequence, biology, chemistry, physics, geometry, mathematics, and, finally, that wider conception, the science of manifoldness.

Considering the origin of "their own methods," one would scarcely expect physicians to deplore the recommendation of new lines of research by biologists, physicists and chemists. But they sometimes do, and the explanation probably lies in the fact that the practical man is pre-eminently conservative in his tendencies. He is seldom the first to try new methods or to cast aside old ones; so far as the practical man is concerned, Pope's famous lines need scarcely have been written. Farmers were a long time giving up the sickle to welcome the reaper; printers have resisted for an unconscionable period the introduction of the linotype machine. Manufacturers fought the principle of "community of interest" until they were forced to accept it; engineers preferred the training of apprenticeship until the graduates of the technical schools began to capture all the prizes in the shape of advanced positions. Should anything arise which would discourage work along biologic, chemical and physical lines in medicine, so that no new applications of these sciences would be attempted, it would be interesting to know whence the streams of medical research could take their spring. A war between medicine on the one side and biology, physics and chemistry on the other would be impious in its nature; the fifth commandment of the decalogue would be definitely disobeyed.

THE ACTION OF THE X-RAYS IN LEUKEMIA.

Our attention has been called to the editorial under the above title, which appeared in these columns November 12, to the effect that it carried the impression that the Senn case was the first one recorded. We lost sight of the earlier recorded cases to which Dr. Pusey called attention in THE JOURNAL, July 23, 1904. We refer to this error on our part so that it may not be repeated by others who may take our editorial statement as correct.

UNCORRECTABLE MISTAKES.

It seems to us rather a curious decision or opinion of the attorney general of Iowa that a medical certificate obtained through misapprehension can not be revoked. A certain osteopath received a certificate from the Board of Medical Examiners while the board was under the impression that the institution from which he obtained his diploma was one of those recognized by the board. When the mistake was discovered it was proposed to revoke the certificate, but the power to do so was denied by the attorney general. The case will probably be a warning to other boards to scrutinize credentials, especially in this class of cases.

MYOCARDITIS IN CHILDHOOD.

Inflammatory and degenerative processes involving the myocardium are generally thought of in connection with mature or advanced life, but when it is considered that the muscular wall of the heart may be affected in the course of various infective disorders it will be clear that the conditions referred to may occur likewise in children, although often the underlying cause may remain obscure. Attention has been called to this matter by Dr. George Carpenter,[1] who has recently reported a case in which uncomplicated myocarditis developed in a

girl in her eighth year and was attended with signs of cardiac failure and terminated fatally. No etiologic factor could definitely be ascertained, although it was suspected that the condition had succeeded on an unrecognized diphtheria. The child presented a cyanotic appearance. The pulse was weak at the wrist and the first sound of the heart was not good, while the second at the left base was accentuated. The urine contained a large amount of albumin. Death resulted and postmortem examination disclosed the existence of fatty degeneration of the myocardium.

A PHYSICIAN WITHSTANDS A MOB.

It is refreshing to learn that a Georgia physician is by himself alone more effective than a whole company of militia in foiling a lot of would-be hangmen. His conduct is in notable contrast to that of many cowardly public officials, whose failures at such times have brought dishonor on their names and on the reputation of their states. In this instance a murderer, himself badly wounded, lay in a hospital. A mob, bent on vengeance, was met at the hospital door by the surgeon-in-charge, who announced his intention to shoot any one who attempted to enter. The mob reconsidered its threat and finally dispersed. We do not know that it is the custom of Georgia physicians to be prepared to meet such emergencies, but it is satisfactory to know that when the occasion occurred one was not found wanting. The physician in this case upheld the best traditions of his profession as a life saver, and should receive the thanks of his brethren and of the community generally. It is a pity that public officials, sheriffs and the like in some portions of the country have not the pluck and regard for their obligations of this physician. He is undoubtedly in his proper place, but otherwise we should recommend the State of Georgia to put him in charge of its militia. At any rate, the latter can profit by his example.

VITAL STATISTICS.

Bulletin fifteen of the Department of Commerce and Labor of the Census Bureau contains a discussion of the vital statistics of the twelfth census, which ought to be a reminder to our state authorities and health boards of their failures of duty in this regard. Only three or four states give approximately correct records of births and deaths and about seven states of deaths alone. The value of such figures is almost incalculable and the Census Bureau has in its last enumeration endeavored to give us some facts that will make up for the deficiencies above mentioned. While the tables are not strictly accurate, they are suggestive in many ways, as well as of value for comparison with other available data. As regards municipal sanitary statistics the figures are more useful, as many cities give fuller, though far from complete, data than do the rural communities surrounding them. They are encouraging as showing in many of these cities a progressive general lowering of the death rate during the past ten years. The figures also show what has been observed elsewhere, that while tuberculosis has decreased its mortality, pneumonia has become progressively a more fatal disorder—a fact which was first brought prominently before the public by THE JOURNAL. The increase of cancer is also a notable fact, pointed out by the census statistics, and deserves—as it is receiving—the careful attention of sanitarians. While the census figures have as a whole only a relative importance and are useful mainly for comparison, they are suggestive and worthy of study.

1. Lancet, Oct. 1, 1904, p. 947.

ANTIVACCINATION AND INTERNAL VACCINATION.

Opposition to vaccination, as well as to other like sanitary requirements, sometimes takes on queer phases. In Latin-American countries, where revolutions are a specialty, it may break up the government, as was apparently attempted the other day in Brazil.[1] In this country the methods are different. The antivaccinationists sometimes find their best resource in the courts of law, and the public health has to go by the board—as shown by legal decisions in one or two states. It is astonishing how ready judges sometimes are to decide medical questions of which they can not have, as their decisions show, any real knowledge. A rather odd development of the antivaccination activity is shown in the contention of the Iowa homeopaths in favor of the internal administration of the virus as a prophylactic against smallpox. We do not know how universal in that school is the faith in this method, but we can hardly believe that an educated homeopath would advocate it. A little education of the public ought, it seems, to serve to make it unpopular. We have all heard of the man who mistook a vaccine point for a toothpick, and of the consequences which he suffered for his mistake. When taken internally, antitoxin and vaccine are usually digested and thus destroyed, but one can easily see what may happen where any internal abrasions or ulcerations exist. The results would probably not be comfortable, and might be excessively dangerous. Probably, however, our homeopathic friends are using it in "high potency," in which case, of course, there will result only negative harm. It will be interesting to observe how the courts decide the Iowa dispute.

THE CHARITY WORK OF PHYSICIANS.

The calculation has been made that the value of the free medical and surgical services, given in one Philadelphia hospital during a year and calculated according to the usual rates of compensation, amounted to $500,000. Supposing it to be only half this amount, which is probably nearer the truth, it is a large sum. This is the contribution of a limited number of physicians—probably forty or fifty—to charity. This is only one of the hospitals of a large city. If the hospitals of the whole country were taken into account, the aggre-

1. "Military and naval detachments have been called on to restore order. Thus far seven persons have been killed and thirty others wounded. It is believed that the opposition to vaccination is only a pretext for disorder and that the disturbances are really instigated by discontented politicians."—Cabled news item from Rio Janeiro.

gate amount given by physicians to charity would rise up well into the millions. If the dispensary services were also reckoned in, to say nothing of the private charity practice of which nearly every medical man has his share, the figures would be still more formidable. If any other occupation in life can make a similar showing of unrequited service it has not yet been heard from, and it is probably safe to say it will not be found. This, too, is service done for the public as well as for the individual, and makes the hospital physician, as it were, a sort of unrecognized quasi public official. Of course, it may be said that those who do this work derive a certain advantage from it, in that they obtain additional experience and reputation, and are thus aided in building up a really remunerative practice. That such motives influence them to a certain extent need not be denied, but it does not alter the fact that the public is the gratuitous recipient of a vast amount of unpaid-for service exacted from a class that is by no means the best remunerated otherwise. There is, moreover, a genuine altruistic motive in many of the cases, as well as a scientific ambition to contribute to the sum of human resources against disease. There are few people who have as much sense of responsibility in their work or to whom the success of the work is of more importance than conscientious physicians. Hence the desire to extend their observations and to gain additional experience by hospital practice. Even private charity practice is not always due to pure benevolent impulse—though we believe that this enters more or less into its motives in most cases—but it may be actuated by the same reasons as those given above; these, however, are creditable in themselves. We have no reason to blush for the record of the medical profession, and while self-praise is morally unhealthy, an occasional reminder of its well-doing is not always amiss. We need not fancy ourselves all William McClures nor coddle ourselves in the contemplation of our own excellencies, but it is well worth remembering that our profession is one that deserves respect, and to let this fact make us the more anxious to keep our profession thus respectable.

Medical News.

GEORGIA.

Convict Physician.—Dr. L. F. Harvin, Atlanta, who is serving a life sentence for murder, has been made physician of the West Holmes and Coffey convict camps, near Valdosta.

Ill and Injured.—Dr. Abner W. Calhoun, Atlanta, is seriously ill with ptomain poisoning.——Dr. J. William Anderson, Clinton, is critically ill at his home.——Dr. W. Monroe Smith, Atlanta, was seriously injured in a runaway accident November 2.

A Brave Physician.—Dr. E. B. Elder, house physician at the Macon Hospital, defeated the plans of a party of men who supposedly wanted to lynch a wounded murderer in the hospital, by confronting the party, informing the members that they could not enter the hospital and emphasizing his statement with a revolver.

ILLINOIS.

Protest at Proposed Removal.—Members of the Sangamon County Medical Society lodged a violent protest November 14 against the proposition to remove the office of the *Illinois Medical Journal* from Springfield to Chicago.

Hospital Opened.—The remodeled St. Joseph's Hospital at Paris, which has accommodation for thirty patients, and already has applications from twenty patients, was formally opened November 19. The hospital is under the charge of the Benedictine Sisters.

Cost of State Charities.—The report of the State Board of Charities shows that the per capita expense of maintenance at the various state hospitals for the quarter ended September 30 was as follows: Illinois Charitable Eye and Ear Infirmary, $45.63; Hospital for Insane Criminals, Chester, $60.40; Illinois Hospital for the Incurable Insane, Bartonville, $33.02; Illinois Western Hospital for the Insane, Watertown, $35.56; Illinois Southern Hospital for the Insane, Anna, $35.94; Illinois Central Hospital for the Insane, Jacksonville, $34.41; Illinois Eastern Hospital for the Insane, $32.44, and Illinois Northern Hospital for the Insane, Elgin, $37.60.

Warning to the Public.—A German with various aliases, among them Hans von Unwerth, Dr. A. J. Roeder, Dr. Troebner, Dr. Brosius, is asking people in Chicago and Evanston for aid on the plea that his wife recently died and left in his care three small children, and that he is without work. He has twice recently given the address "224 Sixty-third Street," which has been found to be false. From the description furnished the Bureau of Charities believes he is an impostor known to have operated in this city in other years, and therefore announces that he is about 5 feet 10 inches tall, weighs 135 to 140 pounds, has blonde hair, blue eyes, small hands, pale smooth face, and wears a light gray suit. He claims to be an engineer, a linguist, a musician, etc.

Chicago.

Donation to Memorial Institute.—Mr. Otto Young has donated $100,000 to the endowment or building fund of the McCormick Memorial Institute for Infectious Diseases.

Addition to Hospital.—Through the munificence of Mrs. R. H. McElwee of Lake Forest, the capacity of the Mary Thompson Hospital for Women and Children will be doubled. She bears the entire cost of the erection of a new three-story addition, to contain an operating room, wards and private rooms.

More Deaths.—Although there were 479 deaths from all causes reported during the week ended November 19, or 66 more than for the week previous, the mortality rate is still satisfactorily low. The excess was caused chiefly by Bright's disease, from which 23 more deaths occurred, and by bronchitis, consumption and pneumonia, from each of which there was an increase of 9 deaths.

Must Pay for Bread Pills.—A Chicago medical "institute" dispensed considerable alleged advice and medicine through central Illinois and took promissory notes in payment in many cases. An injunction secured by 194 of the victims to prevent collection of the notes on the ground that they had been deceived with bread pills and sugar pills has been dissolved in Moultrie County and the case is appealed to higher courts.

Increase in Communicable Diseases.—Except typhoid fever, all the contagious and infectious diseases show an increase in the number of cases reported over those of the previous week—diphtheria from 85 to 92; scarlet fever, 27 to 31; smallpox, 12 to 21; chicken-pox, 1 to 7. The number of new typhoid fever cases reported was only 7 as against 12 the previous week. Total number of all contagious and infectious cases reported, 166, was 15 per cent. more than during the previous week and 55 per cent. more than for the corresponding week of last year.

Staff Examinations for County Hospital.—The recent order of the Cook County Board reducing the number of the attending staff of Cook County Hospital and requiring all applicants for position on the staff to submit to an examination, thereby placing them under civil-service rules, has been productive of much in the way of hard feeling and dissension. A board to conduct the examination was named, consisting of 42 individuals, 38 of whom belonged to the regular school, 2 to the homeopathic and 2 to eclectic. A number of practitioners, chiefly of the homeopathic and eclectic schools, filed a petition November 17, asking an injunction restraining the county authorities from placing members of their profession at Cook County Hospital under civil service. The granting of this injunction stopped the plans for the examinations, which were to begin November 18. In spite of this injunction the president of the Board of County Commissioners has received applications from more than 600 physicians who are desirous to take the examination. The latest development is a petition signed by a number of physicians asking the commissioners to rescind their original motion calling for the examination.

INDIANA.

Anonymous Gift.—An unknown benefactor has presented $1,000 to the Home Hospital, Lafayette, to be applied toward the purchase of new equipment for the institution.

Anti-Spitting Ordinance Wanted.—The Fort Wayne Medical Society decided, November 8, to inaugurate a crusade against tuberculosis and to attempt to secure an ordinance against spitting on sidewalks and in public places. A committee to map out the details of the crusade will be appointed, to consist of eight practicing physicians, seven citizens and the executive heads of the various charities organizations of the city.

No Osteopaths Licensed in the State.—It is stated that the action of the Elkhart County Medical Society in having one of it members file a criminal complaint against an osteopath for practicing without a license, has brought out the fact that none of the 40 osteopaths in the state has secured a license, because the license requirements provide that all applicants must be graduates of schools of four-year courses while osteopathic schools have but three-year courses.

October Sickness and Death.—The most prevalent malady in October was tonsillitis. Typhoid fever maintains the same position of second place it occupied in September. The order of prevalence was: Tonsillitis, typhoid fever, bronchitis, diarrhea, scarlet fever, influenza, pneumonia, diphtheria, pleuritis dysentery, inflammation of bowels, cholera infantum, measles, puerperal fever, whooping cough, cerebrospinal meningitis. Diphtheria and scarlet fever appeared in epidemic form in several places. The severest outbreak occurred in the Miami County Orphan Asylum at Mexico, where there were 56 cases, with 3 deaths. Antitoxin was freely used and all known precautions were rigidly enforced. Smallpox increased as compared with the corresponding month of last year, the increase in cases being 60, and the increase in deaths 17, but the area invaded was less. Two deaths from hemorrhagic smallpox occurred. Both cases were diagnosed as typhoid fever. The total deaths numbered 2,702, an annual rate of 12.3 per 1,000. The rate for October, 1903, was 12.0. Of the total deaths 12.5 per cent. were of children under 1 year of age, and 25.5 per cent. were over 65. Some important causes of death were: Pulmonary tuberculosis, 334; typhoid fever, 164; diphtheria, 17; scarlet fever, 11; whooping cough, 16; pneumonia, 113; diarrheal diseases, 204; influenza, 4; puerperal fever, 6; cancer, 103; violence, 148; smallpox, 18. The city death rate was 15.4 per 1,000; the county rate, 10.1 per 1,000.

KANSAS.

Diphtheria.—For October and up to November 15, 80 cases of diphtheria, with 11 deaths, have been reported. Of the cases 27 occurred in Topeka, with 3 deaths, and 22 in Wichita, with 2 deaths.

Meffert Decision Affirmed.—The Supreme Court of the United States, on November 14, affirmed the decision of the Supreme Court of Kansas in the case of Dr. William M. Meffert of Emporia, Kan., whose license was revoked by the state medical board on the charge of improper conduct. The state courts sustained the validity of the act.

Contagious Diseases.—During the quarter ended September 30, 109 cases of diphtheria, with 24 deaths; 168 cases of scarlet fever, with 18 deaths; 353 cases of typhoid fever, with 82 deaths, and 173 cases of smallpox, with 3 deaths, were reported to the State Board of Health. Since receiving the quarterly reports epidemics of diphtheria in Lyon and Jewell counties have been reported, and 6 cases in Labette County; 50 cases of typhoid fever in Crawford County; 2 cases of smallpox at Neodesha and 3 cases in Kiowa County.

Kansas City Will Be Sanitary.—The council of Kansas City has passed an ordinance submitted by the Wyandotte County Medical Society, which gives the mayor power to appoint the members of the Board of Health, which is to consist of two regular practicing physicians and one veterinary surgeon, each to be a graduate of a reputable school. The mayor is to select the three members from six physicians and three veterinary surgeons to be recommended by the Wyandotte County Medical Society. The members of the board are to serve without pay and will hold office for two years.

MARYLAND.

Endows Hospital Ward.—George W. Navy of Baltimore has endowed the Baby Memorial ward in the new Cambridge Hospital.

Cambridge Hospital.—The Cambridge Hospital was dedicated November 17. A steamer was provided for the Baltimore guests and a very large number of physicians attended. Lunch and supper were provided for them on the boat by the authorities. The exercises were held in the open air in front of of the building. Addresses were made by Judge Henry Lloyd, president of the board of directors, by the governor and by Dr. Howard A. Kelly. The building was then inspected. To date it has cost $70,000, and about $5,000 more will be needed for furnishing. The funds were provided by the state, county and individuals, the largest individual donation being $30,000 by the late John E. Hurst of Baltimore. The cornerstone was laid May 26, 1903. The hospital began in a rented house in December, 1898, and has hitherto been known as the "United Charities Hospital," the name now held having been suggested by Mr. Hurst. The building is of brick, in colonial style, with three stories and basement. It is 136 feet long and 51 feet wide in the center, with wings 36 feet wide. There are porches at the front and ends. The operating room is on the third floor. There is steam heating and lighting, and there are accommodations for 60 patients, 16 rooms being provided for private patients. Dr. Thomas S. Cullen is the visiting surgeon and Dr. Henry O. Reik, specialist in diseases of the eye and ear. The local staff consists of Drs. Brice W. Goldsborough, John Mace, Guy Steele and P. E. Hines.

Baltimore.

Martenet Memorial.—A window in memory of the late Dr. Jacob Fussel Martenet has been placed in Appold M. E. Church.

Bequests.—The late Dr. Charles H. Potter left $20,000 in reversionary bequests to the Presbyterian Board of Relief for Disabled Ministers and the Widows and Orphans of Deceased Ministers.

Personal.—Dr. Henry R. Carter, United States Marine Hospital Service, chief quarantine officer of the Isthmian Canal Commission, arrived in Baltimore from Panama November 17 and started the next day on his return with his wife and children.——Dr. Lloyd Noland, who was appointed one of the resident surgeons at Panama by the canal commission, has taken up his residence on the isthmus.——Dr. Daniel Jenifer has been appointed assistant physician at Bayview Asylum.

MICHIGAN.

Unlicensed Practitioner Fined.—"Dr." B. H. Ling, Germfask, was found guilty of practicing medicine without a license and was fined $10 and costs, with the alternative of 60 days in the county jail.

To Educate Nurses.—The will of the late Elbridge M. Fowler, who recently died in Pasadena, Cal., gives $10,000 to Grace Hospital, Detroit, to aid in the work of educating worthy young women to become nurses.

Cocain Kills Student.—Douglass M. Graves, a student at the Detroit College of Medicine, died at his boarding house in Detroit, November 9, from an overdose of cocain, to the use of which he is said to have been addicted.

October Mortality.—The total number of deaths for October was 2,565, corresponding to an annual rate of 12.0 per 1,000. This rate was lower than that for September (12.7), and also lower than that for the corresponding month of the previous year (12.5). There were 483 deaths of infants under one year of age; 152 deaths of children aged 1 to 4 years, and 789 deaths of elderly persons aged 65 years and over. Important causes of death were as follows: Tuberculosis, 229; typhoid fever, 67; diphtheria, 27; scarlet fever, 3; measles, 4; whooping cough, 9; pneumonia, 109; diarrhea and enteritis, under 2 years, 168; cancer, 146; accidents and other violence, 195. Deaths from pulmonary tuberculosis and pneumonia increased for October as compared with the preceding month, but there was a large diminution in the number reported from diarrheal diseases. Typhoid fever showed a very slight increase over September. There were two deaths reported from smallpox during the month.

NEBRASKA.

Neal Hospital Sold.—Neal Hospital, Nebraska City, has been sold to the Sisters of Charity, who will open it as a public hospital early next year.

Ira Reinstated.—Dr. George W. Ira, resident physician at the Santee Indian Agency, who in the course of the policy of reduction in expenses of Indian offices was removed from office in July last, has been reinstated.

Council **Bluffs, Not Omaha.**—Health Commissioner Dr. John B. Ralph, Omaha, notifies us that the item "Disease Closes School" in THE JOURNAL of November 12 is incorrect, as Omaha has no Bloomer school, and Council Bluffs has a school of that name. Omaha has an increase in the number of cases of diphtheria as compared with last year, but it has not been thought necessary to close any school buildings on account of the disease.

NEW YORK.

A New Assignment.—Dr. Robert C. Lamb, who has been superintendent of Dannemora State Hospital for four years, has been appointed superintendent of Matteawan State Hospital, vice Dr. Henry E. Allison, deceased.

Criticism of Secretary Resented.—The authorities of the Post-Graduate School and Hospital, of Beth Israel Hospital, Babies' Hospital and of Lebanon Hospital have resented the criticisms which Robert W. Hebberd, secretary of the State Board of Charities, is credited with having made that these institutions were deficient in fire protection, sanitation, provisions and facilities for recreation. Mr. Hebberd says there was no censure of institutions intended, but that attention had been called to some defects. A list of institutions that would receive reports of inspection had been read, and the inference might have been made that they were the subject of censure.

Buffalo.

Personal.—Dr. Floyd S. Crego has sailed for Europe.——Dr. Edmond E. Blaauw has returned from Europe.——Dr. Stephen Y. Howell has returned from Florida.

Much and Severe Typhoid.—Many additional cases of typhoid are appearing and the individual cases show a severe form of infection, with numerous hemorrhages and other complications.

Polyglot Medical Journal Club.—A new club known as the Medical Journal Club has been formed, which will meet monthly, abstract and discuss interesting papers as they appear in the leading medical journals of all countries and in all languages.

October Health.—The monthly report of the Department of Health for October shows a death rate of 14.24 per 1,000 per annum. The following were the principal causes of death: Consumption, 36; cholera infantum, 11; cerebrospinal meningitis, 6; diphtheria, 7; typhoid fever, 19; debility, 43; cancer, 27; apoplexy, 7; meningitis, 7; cardiac dilatation, 8; endocarditis, 6; myocarditis, 7; valvular disease of the heart, 25; bronchitis, 11; pneumonia, 39; appendicitis, 3; gastroenteritis, 8; diabetes, 4; nephritis, 21, and violence, 32. The total deaths were 451, as compared with 442 for October, 1903.

New York City.

Bequests.—Under the will of the late Mrs. Sarah B. King, Mt. Sinai Hospital will receive $10,000 and Montefiore Home $5,000.

Award Declared Inadequate.—Dr. J. Harvie Dew, who sued the estate of Oliver W. Buckingham for $55,000, has been awarded by the referee $10,000 for continuous services for five years and $10,000 for providing a home for the patient for three years. Dr. Dew says he will appeal, as the award is inadequate.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended November 12, 362 cases of diphtheria, with 27 deaths; 299 cases of tuberculosis, with 154 deaths; 201 cases of scarlet fever, with 8 deaths; 100 cases of typhoid fever, with 21 deaths; 59 cases of measles, with 3 deaths; 77 cases of varicella; 1 case of smallpox, and 11 deaths from cerebrospinal meningitis.

Report on Subway Air.—The preliminary report of Dr. Chandler of Columbia University to Health Commissioner Darlington has been made public. The conclusion reached is that the air of the subway is entirely satisfactory, that there is no cause for complaint in the present and no need for alarm as to conditions in the future. The analyses of 50 samples of air taken at various stations and under various atmospheric conditions show that the average percentage of oxygen is 20.55. This percentage shows that carbon dioxid is not present in any appreciable quantity. The Board of Health will continue investigations for some time to come before passing final judgment on this matter.

OHIO.

Personal.—Dr. Wylie McLean Ayres, Cincinnati, sailed from New York November 15 for a stay of three months in Switzerland.——Dr. Alvin H. Carr, Reading, was attacked by highwaymen near Pleasant Ridge November 13 and severely injured.

Thirty Years Old.—At the thirtieth annual meeting and banquet of the Mahoning Valley Medical Society, held at Youngstown November 21, Dr. Roswell Park, Buffalo, was the guest of honor and read a paper on "Diseases of the Gall Bladder and Bile Ducts."

Post-Graduate School Opens.—The Cincinnati Polyclinic and Post-Graduate Medical School opened with a reception at the new building, 911 Race Street, November 22. The following make up the staff: Surgery—Drs. Henry A. Ingalls, Travis Carroll, Herschel D. Hinckley and Earl Harlan. Medicine—Drs. Frank L. Ratterman and William E. Kiely. Ophthalmology—Drs. Oscar W. Stark and Theodore A. Christen. Rectal Diseases—Dr. Louis J. Crouse, and Laryngology, Otology and Rhinology—Drs. Adolph Morgenstein, William C. Harris and Thomas V. Fitzpatrick.

Condemns Political Methods in State Institutions.—The following resolutions were adopted at the first meeting of the Tenth Councilor District of the Ohio State Medical Association, held in Columbus, November 15:

In view of the notoriety recently given the Ohio Hospital for Epileptics at Gallipolis, Ohio, be it

Resolved, That this association condemns all political methods in dealing with the benevolent institutions of Ohio and calls on the chief executive to uphold all competent and worthy medical officers of the state, and not to permit the interference of any person for political reasons; and further, that this association will not support any administration that so misuses the benevolent institutions; and be it

Resolved, That a copy of these resolutions be sent to Governor Myron T. Herrick and to the superintendent of the Ohio Hospital for Epileptics.

PENNSYLVANIA.

Personal.—Dr. J. M. Brown, Huntingdon, head of the relief department of the Philadelphia division of the Pennsylvania Railroad, had a cerebral hemorrhage November 14 and is critically ill.

Dr. Care Reinstated.—By order of the judicial council of the Medical Society of the State of Pennsylvania, to which he appealed, Dr. James R. Care, Norristown, who was expelled from the Montgomery County Medical Society three years ago for the alleged offense of having written a letter criticising the Charity Hospital, has been reinstated to all rights and privileges of the society.

Railroad First-Aid.—Medical boxes to be used for first aid to the injured by the Pennsylvania Railroad are being sent out to various points from Altoona. The boxes are wooden and oblong. Each is sealed, with written instructions on the outside. Inside is a tin box securely sealed, with further instructions. When the inner box is once opened it must not be used again, but must be returned to Altoona that it may be fumigated and additional materials inserted. The box contains rubber bandages, compressors and other materials used for first-aid to the injured.

Philadelphia.

Bequest.—By the will of Eliza W. S. P. Field, the Maternity Hospital of the university receives $4,000 in trust.

Faculty Changes in the University.—The trustees of the university have made Dr. Leo Loeb assistant professor of pathology and Dr. Philip S. Stout, assistant demonstrator of pathology.

Report of Jefferson Maternity.—The twelfth annual report of the Jefferson Maternity Hospital shows that 304 patients were treated during the past year, and that 136 children were cared for. The receipts for the year were $6,411.12 and the expenditures $4,582.50, leaving a balance of $1,828.62, of which $1,000 was transferred to the building fund.

Mütter Lecture.—The Mütter lecture on surgical pathology for 1904 will be delivered in the hall of the College of Physicians of Philadelphia, at Thirteenth and Locust streets, Friday, December 2, at 8:30 p. m. by Dr. George H. Monks, Boston, on "Studies in the Surgical Anatomy of the Small Intestine and Its Mesentery." Physicians are cordially invited to be present.

Health Report.—Diphtheria continues to increase despite the efforts of the authorities. This week's record of new cases revealed 119, an increase of 42 over the preceding week. The

major portion of the sufferers are school children. The total number of cases of contagious diseases reported was 249, with 18 deaths, as compared with 239 cases and 10 deaths for the previous week. Deaths from all causes numbered 401, a decrease of 22 from those of last week and a decrease of 8 over the corresponding period of last year. Diseases of the respiratory tract caused 124 deaths.

"Test Case" Fails.—Dr. J. A. McKee was arrested on the charge of issuing a false certificate of vaccination. It was alleged that he had given a certificate without examining the arm of a patient whom he had successfully vaccinated three years before. The health authorities, who caused his arrest, asserted that the law requires that individuals must be vaccinated every two years. On account of the indiscriminate issuance of vaccination certificates the health authorities used this as a "test case." It was found, however, that no specific two-year law of vaccination had been established, and the accused, therefore, was discharged.

GENERAL.

Trachoma in Honolulu.—The health authorities in Honolulu are taking measures to combat the outbreak of trachoma and Dr. W. L. Moore has been appointed special medical examiner of schools.

Yellow Fever in Cuba.—Yellow fever is said to have broken out in Cuba. The cases now reported are the first since the disease was stamped out during the American occupancy of the island in 1900.

Funds for the Study of Tuberculosis.—The National Association for the Study and Prevention of Tuberculosis, which has its headquarters in the United Charities Building, New York City, has issued an appeal for contributions to a fund of $50,000.

Pan-American Congress.—Dr. Henry P. Newman, American secretary of the section on gynecology and abdominal surgery of the Pan-American Medical Congress, is in the South with headquarters at the New St. Charles Hotel, New Orleans. He writes that arrangements for getting to Panama from that port are ideal. Dr. Rudolph Matas, 2255 St. Charles Avenue, New Orleans, is American secretary of the section on general surgery. He writes that, by a change of schedule, the steamer of the United Fruit Company will sail from New Orleans Wednesday, December 28, in time to reach Colon Monday, Jan. 2, 1905, in time for the congress. The rate for the round trip on this boat is now $50, half the regular rates. Dr. Newman states that the southern physicians are enthusiastic over this meeting and he thinks that it will be a great success.

The Pneumonia Commission.—The commission organized under the authority of the Department of Health of New York City to investigate pneumonia has secured the co-operation of hospitals in Baltimore, Washington, Chicago, St. Louis, Kansas City, San Francisco, Buffalo, Helena, Minneapolis, Denver and twenty other cities equally scattered and in Montreal, Canada. These hospitals will carry on the field work and will report on specially prepared blanks. The laboratory work will be carried on in Boston, Philadelphia, Saranac Lake and at three laboratories in New York City. Twenty thousand cases will be studied in the six months which began November 1. The central laboratory will be at the headquarters of the Department of Health of New York City. The commission will study the occurrence and virulence of the pneumococcus and the organisms related to or resembling this in the human mouth in health and in disease; the evidence of variation in virulence of the pneumococcus; the occurrence of the pneumococcus in children's hospitals, homes and asylums, with a study of the bacteria of mouths before and after an outbreak of pneumonia; the vitality of the pneumococcus under various conditions; the study of mouth disinfection and the study of the air in public places, especially in reference to its dust content. The first six months of this year showed a death rate of 19.6 per cent. of the total number of deaths due to pneumonia. The same period in 1903 showed a death rate of 16.5 per cent. due to this cause. The commission will probably make an examination of subway workers and surface car men with the object of ascertaining the effects of these employments on the health of these men.

CANADA.

Vaccination in Lumber Camps.—Lumbermen are said to be guarding against possibilities of smallpox outbreaks by compelling their men to be vaccinated before going into the camps. One concern, which has already sent 300 men into camps in its New Ontario limits, required them all to be vaccinated.

St. John Vital Statistics.—There were 751 deaths in the city of St. John, N. B., during the year ended Oct. 31, 1904, as compared with 777 for the previous year. Tuberculosis caused 108 of the number, 19 more than in 1903. There were 100 cases of diphtheria reported, with 11 deaths; scarlet fever, 58 cases, 2 deaths; measles, 67 cases, 1 death; typhoid fever, 20 cases, 6 deaths; smallpox, 1 case, no death.

FOREIGN.

Tuberculosis a Reportable Disease.—The United States Public Health and Marine-Hospital Service reports that the Birmingham (Eng.) city council authorized the health officer to request physicians to notify the health department of all cases of phthisis which came under their observation in Birmingham. The council has no authority to compel this notification, but by promising that the information would be confidential, the system has been successfully carried out. As a supplementary step, a tuberculosis inspector will be appointed, at a salary of £100 ($486) per annum.

Russian Quarantine Regulations.—From the public health reports we learn that the Russian Board of Medicine has elaborated regulations to be put in force in case the cholera epidemic should spread as far as Moscow. For this purpose the town is divided in sections, and all the cases, should the disease appear, are to be carefully registered and all dwellings are to be disinfected. It has been decided to make experiments with anticholeric lymph, and to distribute among the population pamphlets containing directions as to the precautionary measures to be adopted in order to check a spread of the epidemic. The towns of Baku and Saratow are declared to be infected with cholera.

From the Seat of War.—A telegram from Professor Zoege von Manteuffel, dated Mukden, October 19, says: "We have passed through the greatest battle the world or history has ever known. We are alive and well." An official dispatch states that during two weeks in October Mukden received 775 wounded officers and 27,887 wounded privates, 168 sick officers and 3,224 sick privates. After they had been duly cared for and fed they were forwarded to hospitals beyond. General Trepow adds to his report a few words of appreciation of the tireless devotion of the surgeons. The quarters where the wounds were dressed were frequently under fire. The authorities have ordered another lot of physicians in Russia to report at the seat of war. This leaves a large district in Russia temporarily without medical aid. A large consignment of antidysentery serum has recently been forwarded to the active forces.

Smallpox in India.—Smallpox is endemic in the Bombay presidency, according to the last report of the United States Public Health and Marine-Hospital Service. There being no jurisdiction over the movements of infected persons, either by road or boat, in Lind province, the disease spreads readily. In a very severe outbreak in the town of Malegaon there was great opposition to vaccination on the part of a class of local weavers, and great difficulty in obtaining early notification of the disease from neglect on the part of the people in reporting cases. Parents in the jungle districts of Kanara and Dharwar object most strongly to vaccination, especially of infants under one year of age; thus many children escape vaccination permanently. The preventive measures were those habitually adopted, viz.: On the notification of outbreaks, vaccination and revaccination is offered to the people, and as much vaccination work performed in and around the affected area as possible. Isolation and disinfection methods are at present impracticable. Owing to notification being non-compulsory, frequently the only intimation received by the deputy sanitary commissioner is the return of deaths from smallpox, by which time the disease has obtained a firm hold on the village. In the city of Bombay notification is compulsory and vaccination is required before the age of six months. Disinfection of quarters where cases have occurred is regularly carried out.

Medical Organization in Belgium.—The Federation of Medical Societies in Belgium held its annual meeting October 27. The president, Dr. Merveille, editor of the *Gazette Méd. Belge*, remarked in the course of his address that one of the federated medical societies was in the habit of sending to the office of the Federation a copy of all the programs, notices, etc., sent by its secretary to its members. He commented on the value of the information thus obtained, the central office being thus kept in touch with what is going on in this local society. He

suggested that each of the local societies should instruct its secretary to place on its mailing list the names of the secretaries of all the other local societies. The extra expense and trouble would be trifling in comparison with the benefits to be derived by being thus kept in touch with each other. In many instances this interchange of ideas would prove an inspiration and stimulation and the research of one might supplement that of another, instead of several working on the same task. The assembly adopted the following resolution among others: "The surgeon shall present a global bill for every operation, the amount including the sums to be paid to his aids and to the attending physician for their intervention in the operative act. The physician attending the patient afterward and giving the after-care shall present his account separately." In the discussion beforehand Dejace remarked that the lay press might comment on this resolution in a way to travesty the upright intentions of the medical body, and he urged those physicians who had entrée to the lay editorial sanctums to place the matter in the proper light. The president suggested that the officers of the Federation might take the initiative in the matter, and his suggestion was approved.

LONDON LETTER.

Dairyman Held Responsible for Typhoid Germs in Milk.

A verdict given against the Aylesbury Dairy Company, one of the largest firms engaged in the sale of milk in London, is of far-reaching importance, applying, as it does, an old principle in law to a new set of circumstances. In July last year there was an epidemic of typhoid fever in Ealing, a London suburb. Among the victims was a woman who died. She had partaken of milk supplied by the Aylesbury Dairy Company. Her husband, believing that the milk was the source of the disease, sued the company for damages. His counsel pointed out that the company, in their advertisements, guaranteed that their milk was free from disease germs. He also proved that part of the company's supply was drawn from a farm where there had been a case of typhoid fever. If the milk had been polluted then he contended that there had been a breach of warranty. There was some difference in the expert evidence as to the contamination of the milk. Dr. Thresh, examiner in state medicine at the University of London, said that there was a suspicion as to the milk, but the proof was far from conclusive. Evidence was given that in June, July and August, 1903, 21 cases of typhoid fever occurred in this suburb and in 12 the milk was supplied by the defendants. For the defense it was shown that elaborate precautions were taken by the company to insure the purity of the milk. The judge instructed the jury that if a purveyor sold food injurious to health he was liable. The jury found a verdict for $530, the amount of expense to which the woman's husband had been put. It is thought by health officers that the decision will do much good by making dairy companies more particular.

Identification by Teeth Casts.

A dentist has called attention to the value of teeth casts in identification—a means which does not seem to have previously been used. He relates the following example: A gentleman went to Africa to shoot big game. Soon a newspaper report appeared that he had been murdered by the natives. His property was large, but probate would not be granted on the basis of the newspaper report. His brother went to Africa and was shown the spot where the murdered man was said to be buried. The skeleton was found and brought to England. But how could it be identified? The probate court remained inexorable. It occurred to a relative that the man had consulted a dentist and the skull was brought to him. He had supplied the missing man with a set of artificial teeth and kept the cast of his mouth. Comparison of this with the skull at once proved his identity beyond doubt and probate was granted forthwith. The dentist insists that, as in the case of finger prints, no two persons' mouths are alike and that a mouth may be identified by a cast taken years ago even though teeth have subsequently been destroyed or the gums lost, as in a skeleton.

Plague in Natal.

Mr. Ernest Hill, health officer of Natal, has issued a report on the outbreak of plague in that colony. The first case occurred in Durban on Dec. 4, 1902, and the last in the same town on Aug. 15, 1903. In all there were 221 cases, of which 162 were fatal—a mortality of 73 per cent. Of this number 201 cases, with 145 deaths, occurred in Durban alone. The disease was principally spread by infected rats and mice. High value is attached to Haffkine's method of preventive inoculation and some good results were apparently obtained from Yersin's serum. The report gives the results of some valuable bacteriologic researches by Mr. Watkins-Pitchford, assisted by Dr. L. G. Haydon. Some of the most notable experiments were those concerning the vitality and virulence of the plague bacillus. Rodents were confined in boxes carefully protected from all possibility of outside contamination. The boxes were first infected by rats suffering from the disease; when these died healthy rats, after the lapse of a month, were introduced and contracted the disease. When two months elapsed before the introduction of another batch of healthy rats the experiments proved negative. Attempts to transmit the disease to the domestic animals, after the method of Professor Simpson in Hong Kong, proved negative. It is concluded that the strain of bacillus used in Hong Kong has a wider pathogenic range than that used in Natal, and that domestic animals did not in the latter place play a part in the transmission of the disease. The writers insist on the untrustworthiness of microscopic appearances in the diagnosis of plague. To come to a trustworthy conclusion cultural characteristics and the virulence of the organism must be tested.

Correspondence.

The Passing of the Red-Light Treatment of Smallpox.

PHILADELPHIA, Nov. 16, 1904.

To the Editor:—In May, 1903, I published in THE JOURNAL[1] an article in which the value of the red-light treatment of smallpox so stoutly championed by Finsen, was questioned. The theoretical objections to the acceptance of Finsen's claim were discussed in detail and the unfavorable results of the treatment of two cases of smallpox in a well-equipped red-light room were given. Finsen replied to this article and criticised the methods employed and the deductions drawn.

Since this time Dr. Nelson D. Brayton[2] of Indianapolis published the absolutely negative results obtained in the treatment of 300 cases of smallpox in red-light wards. In the *London Lancet*, July 30, 1904, there appears an article[3] on "The Red-Light Treatment of Smallpox," by Dr. T. F. Ricketts, medical superintendent of the Smallpox Hospital of the Metropolitan Asylums Board, and J. B. Byles, assistant medical officer of the Joyce Green Hospital. These men, who have had large experience in smallpox, treated 13 cases of smallpox in a thoroughly equipped red-light room. Seven of the cases were placed in the room on the second day of the eruption; no objection can, therefore, be made that the cases were received too late. Suppurative fever and suppuration were not prevented. The authors state, "We can not agree that the treatment has any of the merits which have been claimed for it." Indeed, these English physicians of experience rather regarded the red light as harmful. "We thought the treatment had an unfavorable effect on the general condition of the patient. The tendency to mental symptoms (delirium, headache, restlessness, etc.) seemed more marked." In concluding the authors said: "We venture to appeal to Dr. Finsen, who has done so much for suffering humanity, to cease to lend the weight of his authority to support a method of treatment which, if it is inefficacious, must necessarily be inhuman."[4]

During a visit to Copenhagen this summer I was told by Dr. Reyn of the Light Institute that the Empress of Russia had given instructions to have the red-light treatment thoroughly tested in one of Russia's smallpox hospitals.

Dr. Finsen has recently died and a noble and useful life has been cut short. Finsen's work in the application of actinic rays of light to the treatment of skin diseases, particularly lupus, entitles him to a prominent place in the history of medicine. The use of red light or, rather, the exclusion of actinic rays of light in the treatment of smallpox, will soon be forgotten.

1. May 2, 1903, p. 1183.
2. July 25, 1903, p. 233.
3. Abstracted in THE JOURNAL, August 20, '98, p. 573.
4. EDITOR'S NOTE.—Finsen's reply to the report of Ricketts and Byles is reviewed in this issue of THE JOURNAL, foreign abstract 12, p. 1665.

Finsen was obviously deceived, as were likewise some other physicians who used the red-light treatment in smallpox, through inexperience with this disease and a consequent inability to distinguish between the natural course of smallpox of different degrees of severity and a modification the result of treatment. I was shown this summer a temperature chart of one of Finsen's published cases of smallpox. There was distinct secondary fever beginning on the sixth day of the eruption; this had not been interpreted as such, but had been attributed to a parotitis. Physicians with the largest experience in smallpox are agreed that there is no known remedy which can abort or modify the course of the variolous eruption. The liability to error in interpreting the value of therapeutic agents is especially great in those diseases which from time to time vary greatly in severity.

JAY F. SCHAMBERG, M.D.

Queries and Minor Notes.

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish his name will be faithfully observed.

ANTIKAMNIA FOR THE PUBLIC.

DR. W. W. GOLDEN, secretary of the West Virginia State Medical Association, has forwarded us a letter, circulars, etc., which were handed him by a non-medical friend and which he asks us to publish. We have on several occasions called attention to the fact that the medical profession has been doing its share to help the antikamnia people to bring their various combinations to the attention of the public. Of course, to use physicians for this purpose is a cheap way of advertising, as newspaper rates are pretty high, especially when a firm attempts to cover the whole country. With over 100,000 physicians as agents, without pay, the expense of promotion is minimized immensely. We can not but admire the Antikamnia Chemical Company in the wisdom they have shown; their method of "promotion" is an excellent one, and others are following their footsteps. The following is the letter referred to:

St. Louis, U. S. A., Oct. 17, 1904.

Mr. H.:—We are pleased to enclose a sample of "Antikamnia Tablets" for Pain. A sample of something good is a "good thing" to keep about the house, or, for convenience, in your pocket or purse. Antikamnia Tablets will relieve all headaches, muscular pains, neuralgias, la grippe, insomnia and women's aches and ills. The enclosed booklet tells when and how many, and druggists everywhere sell them in any quantity or in our regular "Vest-Pocket Boxes" as below. Sincerely yours,

The Antikamnia Chemical Company,
Frank A. Ruf, Prest. and Treas.

On the letterhead are such legends as the following: "Vest-Pocket-Boxes;" "Sent direct by mail on receipt of 25 cents, if your druggist can not supply them;" "Order a 'Vest-Pocket-Box' of 'Antikamnia Tablets' so as to have them on hand in time of Pain." Stuck to the letter is an artistic picture of a poor wretch evidently suffering from neuralgia of the face with a hint that antikamnia is for facial neuralgia. From the circulars accompanying the letter we clip the following:

"There are numerous important uses for Antikamnia Tablets, of which many may be uninformed. Before starting on an outing, everybody, and this includes tourists, picknickers, bicyclers, and, in fact, anybody who is out in the sun and air all day, should take a five-grain Antikamnia Tablet at breakfast, and avoid entirely that demoralizing headache which frequently mars the pleasure of such an occasion. This applies equally to women on shopping tours, and especially those who invariably come home cross and out of sorts, with a wretched 'sightseer's headache.' The nervous headache and irritable condition of the business man is prevented by the timely use of a ten-grain dose. Every bicycle rider, after a hard run, should take a bath and a good rub-down and two five-grain Antikamnia Tablets on going to bed. In the morning he will awake minus the usual muscular pains, aches and soreness. As a preventive of the above conditions, Antikamnia is a wonder, a charming wonder, and one trial is enough to convince."

They quote, or rather misquote, from an article by Dr. John H. McIntyre, published in THE JOURNAL of the American Medical Association some thirteen years ago, the object evidently being to make it appear as though this journal endorsed the use of antikamnia. The pathetic part of the whole matter comes from the fact that directions are given for the use of antikamnia and codein in practically every disease to which flesh is heir; there is no hint anywhere, so far as we can discover, of the danger accompanying the use of acetanilid and codein.

USE OF SUGGESTION—THE STATUS OF THE LIBERAL HOMEOPATH.

NEW YORK CITY, Nov. 14, 1904.

To the Editor:—Can you advise me whether the consensus of professional opinion is for or against the recommendation, to suitable patients, of such therapeutic methods as mental science or Christian Science? In other words, should we consider solely the welfare of the patient or should we consider how the recommendation of a certain measure, while beneficial to one, may, through our having recommended it, work harm to others. 2. Kindly tell me if homeopathic medical colleges are to-day teaching homeopathy. 3. Is not a man a fraud who claims to be a homeopath and yet does not practice homeopathy? J. J. N.

ANSWER.—The answer to this query naturally divides itself into two parts. For instance, certain patients may be benefited by the application of the therapeutic *methods* of mental healing, etc., while it might be highly inadvisable to place those patients in the care of such individuals as in a given locality happen to be practicing "mental science," etc. In other words, it may be proper, and even desirable, in a given case that the physician himself apply the methods of the healers or else refer the patient to a physician experienced in the application of suggestion. As the exponents of the various "healing" cults are ignorant of the natural sciences on which modern medicine is based, and as they are always either self-deluded or dishonest, it is difficult to imagine circumstances that would justify the reference of a patient to one of them. 2. Homeopathic colleges still teach some modification of homeopathy. In many of them the subject occupies only a small portion of the curriculum. 3. This is a question of casuistry. How many people are what they "claim to be"? If the man who "claims to be a homeopath and yet does not practice homeopathy," at the same time believes himself to be a homeopath, it would be using unduly strong language to call him a fraud. If he deliberately pretends to be what he knows he is not, he, of course, is a fraud. The charitable attitude under any such circumstances can do us no harm.

CURE OF INGROWING TOENAIL.

MEXICO, Nov. 11, 1904.

To the Editor:—I have a patient who has been troubled for two years with an ingrowing toenail. The nail has been taken off twice by physicians in the States, but the condition is gradually growing worse. The nail extends down into the tissue at least one-quarter of an inch, only the side next the second toe being affected. There is a continual discharge of pus and small pieces of nail have several times come out of the bottom of the toe. Naturally the man is much discouraged from the previous results and wants the very best thing done this time. Kindly give your best opinion. I have treated several cases before by the various methods commonly used, but I have not had good results in this case. W. J. E.

ANSWER.—Failure followed the removal of the nail because the matrix was not removed with the nail. A very successful and satisfactory way of treating ingrowing toenails is to remove that part of the nail which becomes imbedded in the flesh together with its portion of the matrix. Under local or general anesthesia begin at the free border of the nail and cut longitudinally, extending through the nail to the root, removing only that portion of the nail which is giving rise to the trouble. After removing this portion of the nail cut out a wedge-shaped piece, including all of the matrix, back to the root, which has been uncovered. The wedge should include all of the tissues down to the phalanx. The tissues then fall together and primary union usually results. If care be taken to remove all the matrix back to and including the root, the relief will be complete as well as permanent.

DURATION OF LICENSE TO PRACTICE.

CRAWFORDSVILLE, IND., Nov. 21, 1904.

To the Editor:—On page 1562 of THE JOURNAL, Nov. 19, 1904, in reply to question asked by "T," you state that a license issued to practice medicine in 1895 in Indiana, "entitles the holder to practice medicine in Indiana without an examination." You are in error in this statement. Any license issued prior to March 8, 1897, confers no legal right to practice medicine in any of its branches in Indiana. All licenses issued prior to March 8, 1897, were revoked by the present law. Please make correction.

W. T. GOTT, M.D.,
Secretary of the Indiana Board.

INTERNAL VACCINATION.

OHIO, Nov. —, 1904.

To the Editor:—Kindly give through your Queries and Minor Notes columns the value of the internal administration of antitoxin, both as a preventive and a curative measure. VERITAS.

ANSWER.—So far as known the internal administration of antitoxins has no preventive and curative effect because the digestive juices destroy the antitoxins before they can be absorbed. See editorial in this issue.

EPIDURAL INJECTIONS.

CAMPBELLSPORT, WIS., Nov. 12, 1904.

To the Editor:—Please explain Cathelin's epidural injections.

F. H. RUSSELL.

ANSWER.—Cathelin's epidural injections are injections of cocain outside the dura between it and the vertebral arches. This method has been claimed to be less dangerous than the subarachnoid method. It has been found useful not only for anesthesia, but also in urinary incontinence and night pollutions. Numerous articles dealing with the method have been abstracted in THE JOURNAL, vol. xxxvii, pp. 150 and 793; vol. xxxviii, p. 1282; vol. xli, pp. 287 and 399.

WANTS A SKELETON ARTICULATED.

GRAND JUNCTION, COLO., Nov. 15, 1904.

To the Editor:—Where can I send a skeleton to have it articulated?

DR. U. S. ABBOTT.

Marriages.

RAYNOR S. FREUND, M.D., Butte, Mont., to Miss Sue McLanahan, at Butte.

HERBERT FOX, M.D., to Miss Emma Louise Gaskill, both of Philadelphia, November 9.

LOUIS BROWN, M.D., St. Louis, Mo., to Miss Mabel Martin of Peoria, Ill., November 15.

EVERETT W. GOULD, M.D., to Miss Alice E. Williams, both of New York City, November 10.

CHARLES W. BAILEY, M.D., to Miss Josephine Ida Groesbeck, both of Hebron, Ill., November 3.

T. SNIVELY DUNNING, M.D., Columbia, Pa., to Miss Elizabeth Christina Nittinger, November 9.

TULLY O. HARDESTY, M.D., Kampsville, Ill., to Miss Kathryn Killum of Winfield, Mo., September 20.

WILLIAM H. GREEN, M.D., Farnhamville, Iowa, to Miss Bertha Marohn, at Des Moines, Iowa, November 9.

FRANK WINFIELD LAIDLAW, M.D., Hurleyville, N. Y., to Miss Sylvia Coddington of Loch Sheldrake, N. Y., October 26.

PHILIP STANLEY CHANCELLOR, M.D., Santa Barbara, Cal., to Miss Emma Elise Matthiessen of La Salle, Ill., November 23.

Deaths.

Henry Munson Lyman, M.D.

Dr. Henry M. Lyman, for many years a professor and senior dean of Rush Medical College and one of the most prominent practitioners of the west, died at the home of his daughter in Evanston, Ill., November 21, after an invalidism of four years, aged 68. The cause of his death was angina pectoris. Dr. Lyman was born in Hilo, Hawaiian Islands, Nov. 26, 1835, and was graduated from Williams College, Massachusetts, in 1858, as valedictorian of his class. He commenced the study of medicine at Harvard University Medical School, Boston, but graduated—again as valedictorian—from the College of Physicians and Surgeons in the City of New York, in 1861. After a short term as interne in Bellevue Hospital, he entered the Army and served as acting assistant surgeon from 1862 to 1863, being on duty in the military hospitals of Nashville, Tenn. In 1863 he established himself in practice in Chicago, paying especial attention to diseases of the nervous system. From 1871 to 1876 he was professor of chemistry in Rush Medical College; from 1876 to 1877, professor of diseases of the nervous system; from 1877 to 1879, professor of physiology and of nervous diseases, and from 1889, professor and emeritus professor of the theory and practice of medicine in the same institution. He was also professor of medicine in the Northwestern University Woman's Medical School from 1880 to 1888. He was attending physician to Cook County Hospital, Chicago, from 1867 to 1876, and to the Presbyterian Hospital from 1884 until his retirement. He became consulting physician to St. Joseph's Hospital in 1890. Dr. Lyman's society affiliations included the Chicago Pathological Society, of which he was president in 1876; the Illinois State Medical Society, the American Neurological Association, of which he was president in 1892-1893; and the Association of American Physicians, of which he was president in 1891-1892. His chief contributions to the literature are his works on "Artificial Anesthesia and Anesthetics," published in 1880; "Insomnia and Other Disorders of Sleep," in 1886; a "Text-Book of the Theory and Practice of Medicine," in 1892, and numerous articles in the literature.

T. M. Drown, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1862, died in St. Luke's Hospital, Bethlehem, Pa., one week after an operation for an intestinal tumor, November 16, aged 62. Dr. Drown served as surgeon in the Civil War and subsequently studied in the School of Mines at Freiburg and the University of Heidelberg and became, in 1869, instructor in metallurgy in Harvard University; from 1874 to 1881 he was professor of analytical chemistry in Lafayette College. In 1885 he filled a similar position in the Massachusetts Institute of Technology, becoming president of Lehigh University in 1895. Dr. Drown was one of the charter members of the American Institute of Mining Engineers and its secretary for 13 years.

Duncan Campbell MacCallum, M.D. McGill University, Montreal, 1850, M.R.C.S. England, 1851; demonstrator of anatomy at McGill University, 1854 to 1856; professor of clinical surgery, 1856 to 1860; professor of clinical medicine and medical jurisprudence, 1860 to 1868; professor of midwifery and diseases of women and children, 1868 to 1883, and emeritus professor thereafter; a frequent contributor to the medical literature; one of the founders of the *Medical Chronicle;* visiting physician to the Montreal General Hospital from 1856 to 1887, and then consulting physician; in charge of the University Lying-in Hospital from 1868 to 1883 and afterward its consulting physician, died November 13 at his home in Montreal after a short illness, aged 80.

Francis M. Casal, M.D. Rush Medical College, Chicago, 1864, a member of the American Medical Association, formerly of Pittsfield, Ill., died recently at his home in Santa Barbara, Cal. At a meeting of the Santa Barbara County Medical Society, of which Dr. Casal was one of the oldest and most beloved members, held November 9, resolutions of sorrow at his death and sympathy with his household were unanimously adopted.

James L. Bryan, M.D. University of Maryland, Baltimore, 1849, a veteran of the Mexican War; for about 32 years school commissioner of Dorchester County, Maryland, and largely instrumental in establishing the school system there after the war; who gave up practice and founded the Cambridge Military Academy, died at his home in Cambridge, November 6.

William McClellan Reber, M.D. Jefferson Medical College, Philadelphia, 1863, a prominent physician and citizen of Bloomsburg, Pa., died at Wilkesbarre City Hospital from peritonitis November 18, aged 61. He was a member of the American Medical Association and of the state and local medical societies.

W. H. Carter, M.D. College of Physicians and Surgeons, New York City, formerly in the United States Navy and a member of the Kansas legislature in 1882, died at his home near Cottonwood Falls, Kan., November 13, from Bright's disease, aged 60.

Hunter A. Bond, M.D. Bellevue Hospital Medical College, New York City, 1891, first assistant physician at Manhattan State Hospital, member of the Medico-Psychological Society, and of the Medical Society of the County of New York, committed suicide at Petersburg, Va., November 14.

William R. Gibson, M.D. University of Edinburgh, Scotland, for 15 years a practitioner of Bradford, Pa., died at the State Hospital for the Insane, Warren, where he had been a patient for about eight months, November 7, aged 49.

Edward Thomas Gagen, M.D. King and Queen's College, Ireland, 1880, formerly of Baker County, Oregon, committed suicide at his apartments at Los Angeles October 31, while despondent on account of heart disease, aged 46.

Thomas S. Hopkins, M.D. Medical College of the State of South Carolina, Charleston, 1845, a Confederate veteran, at one time surgeon at Andersonville prison, died at his home in Thomasville, Ga., November 12, aged 87.

John W. Hensley, M.D. Rush Medical College, Chicago, 1867, formerly secretary of the Illinois State Medical Society, died at his home in Peoria November 14, from paralysis after an illness of ten days, aged 68.

James J. Healey, M.D. College of Physicians and Surgeons in the City of New York, 1872, once president of the Essex North Medical Society, died at his home in Newburyport, Mass., November 11, aged 56.

Thomas S. Duckett, M.D. Jefferson Medical College, Philadelphia, 1836, who represented Prince George County in the legislature in 1845, died at his home in Bladensburg, Md., November 12, aged 89.

Lewis Washington Knight, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1847, died at his home in Nashville, Tenn., November 2, after an illness of six weeks, aged 88.

James P. Burchfield, M.D. University of Michigan Department of Medicine and Surgery, Ann Arbor, 1862, of Clearfield, Pa., died at Williamsport, Pa., November 8, after an illness of two days.

James Poulson, M.D., an ex-Confederate soldier, for a number of years a practitioner of Texas, who retired several years ago to the eastern shore of Virginia, died at Onancock, November 15, from an acute affection of the throat, aged 65.

G. S. Mostellar, M.D. Medical Department Illinois College, Jacksonville, a surgeon in the Mexican War, died at the home of his son in Pittsburg, Kan., November 11, aged 82.

George Henry Jefferson, M.D., one of the oldest physicians of Trigg County, Kentucky, died at the home of his son in Linton, November 2, from heart disease, aged 73.

Mell R. Hackedorn, M.D. Bellevue Hospital Medical College, New York City, 1870, died at his home in Galion, Ohio, November 16, after an illness of two days, aged 58.

Isaac F. Cowan, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1860, died at his home near Metuchen, N. J., November 10, aged 80.

Marion L. Amick, M.D. Cincinnati College of Medicine and Surgery, 1869, died at his home in Cincinnati November 15, after an illness of two weeks, aged 61.

William A. Huddleston, M.D. Atlanta (Ga.) Medical College, 1880, died at his home in Wetumpka, Ala., November 8, from lung disease, after a long illness.

Benjamin Franklin Keith, M.D. Rush Medical College, Chicago, 1858, died at his home in Edwardsport, Ind., November 5, from Bright's disease, aged 79.

William Ratliffe Brandon, M.D. New Orleans School of Medicine, 1857, died at his home in Como, West Feliciana Parish, La., November 2, aged 70.

Charles E. Daniels, M.D. Illinois, 1876, a pioneer physician of South Dakota, died at his home in Milbank, November 13, from apoplexy.

Jerome T. Whelpley, M.D. Illinois, 1887, one of the oldest physicians of southern Illinois, died at his home in Cobden, November 10.

J. M. Browder, M.D. Cincinnati College of Medicine and Surgery, 1889, died at his home in Celina, Ohio, October 25, aged 74.

William F. Van Kirk, M.D. Jefferson Medical College, Philadelphia, 1868, died at his home in Grafton, W. Va., November 12.

L. P. Jones, M.D. Tulane University, New Orleans, recently killed his wife and then shot himself, at his home in Benjamin, Texas.

Thomas H. Cooper, M.D. Detroit College of Medicine, 1898, of Orion, Mich., died at his early home in Canada November 1.

Benjamin F. Sides, M.D. Jefferson Medical College, Philadelphia, 1872, died at his home in Furniss, Pa., November 17.

John Hawes, M.D. Louisville Medical College, 1893, died at his home in McBean, Ga., November 12, from typhoid fever.

Alcia Jane Howard Koch, Ohio, 1865, died at her home in Indianapolis, November 12, after an illness of six months.

W. K. Dangielowicz, M.D., died at his home in Shamokin, Pa., November 1, after an illness of four weeks, aged 60.

A. J. Hodge, M.D. University of Nashville Medical Department, 1874, died recently at his home in Cuero, Texas.

Lyman W. Henry, M.D. Indiana, 1897, of Burnettsville, Ind., died at Battle Creek, Mich., October 29, aged 87.

B. C. Cook, M.D. Medical College of Georgia, Augusta, 1857, died at his home in Long Cave, Ga., October 11.

William B. Bolton, M.D. Illinois, formerly of Canton, Ill., died at Cuba, Ill., November 10, aged 79.

T. C. Conklin, M.D. Illinois, 1888, died suddenly at his home in Farmington, Ill., November 9.

J. D. Drane, M.D., died at McCool, Miss., October 13.

Book Notices.

THE MEDICAL NEWS VISITING LIST, 1905. Weekly (Dated for 30 Patients); Monthly (Undated for 120 Patients per Month); Perpetual (Undated for 30 Patients Weekly per Year); 60-Patients (Undated, for 60 Patients Weekly per Year). The Weekly, Monthly and 30-Patient Perpetual Contain 32 Pages of Data and 160 Pages of Classified Blanks. The 60-Patient Perpetual Consists of 256 Pages of Blanks Alone. Each in One Wallet-shaped Book, Bound in Flexible Leather, with Flap and Pocket, Pencil and Rubber, and Calendar for Two Years. Price, $1.25. Thumb-letter index, 25 cents extra. By mail, postpaid, to any address. Philadelphia and New York: Lea Brothers & Co.

PHYSICIAN'S POCKET ACCOUNT BOOK. By J. J. Taylor, M.D., 4105 Walnut St., Philadelphia. Containing Obstetric, Vaccination and Death Records and Cash Accounts. 4¼x6¾ Inches. Over 244 Pages. Leather, $1.00. Also bound in manila boards with separate leather case. Price of case and two manila books, $2.00. Subsequent manila books to use in the case, 60 cents each; two for $1.00; three for $1.40. Also large size for desk or office use, $4.00. Philadelphia: Published by the Author.

THE MEDICAL RECORD VISITING LIST OF PHYSICIANS' DIARY FOR 1905. New Revised Edition. Bound in Flexible Leather, with Flap and Pocket, Pencil and Rubber. Price, $1.25. New York: Wm. Wood & Co.

These three are neat, compact and well-bound pocketbooks for the recording of the names of patients and the services rendered day by day for a year. The two visiting lists contain in addition the usual summaries, the comparisons of scales, urinalysis rules, guide for emergencies, dosage and obstetric tables, etc. The pocket account book is especially devoted to the keeping of physician's accounts in ledger form and is so arranged that it shall be a book of original record, each patient's name being in a separate place. The two visiting lists are spaced by days and each day's record is by itself.

TEXT-BOOK OF HUMAN PHYSIOLOGY, Including Histology and Microscopical Anatomy, with Especial Reference to the Practice of Medicine. By Dr. L. Landois, Professor of Physiology and Director of the Physiological Institute in the University of Greifswald. Tenth Revised and Enlarged Edition. Edited by Albert P. Brubaker, M.D., Professor of Physiology and Hygiene in the Jefferson Medical College. Translated by Augustus A. Eshner, M.D., Professor of Clinical Medicine in the Philadelphia Polyclinic. With 394 Illustrations. Cloth. Pp. 1027. Price, $7.00. Philadelphia: P. Blakiston's Son & Co. 1904.

This is the fifth English and the tenth German edition of this work. The part devoted to the circulation is complete; abnormal conditions, abnormalities in the heart sounds, murmurs, etc., are contrasted with the normal condition. Directions are given for transfusion of blood. The action of the ductless glands and the influence of their secretions on the circulation are only briefly mentioned. The pituitary body is not mentioned at all in connection with acromegaly. Electricity in relation to physiology is discussed at some length, as are the methods of making blood examinations and urinalysis. The section on the physiology of the organs of special sense is complete and practical.

A PRACTICAL TREATISE ON DISEASES OF THE SKIN, For the Use of Students and Practitioners. By James Nevins Hyde, A.M., M.D., Professor of Skin, Genito-urinary and Venereal Diseases, Rush Medical College, Chicago, and Frank Hugh Montgomery, M.D., Associate Professor of Skin, Genito-urinary and Venereal Diseases, Rush Medical College, Chicago. Seventh and Revised Edition. Illustrated with 107 Engravings and 34 Plates in Colors and Monochrome. Cloth. Pp. 938. Price, $4.50. Philadelphia and New York: Lea Brothers & Co. 1904.

The fact that seven editions of this work have been demanded is sufficient evidence of its high standard. The new chapters added on general pathology of the skin, radiotherapy and phototherapy, as well as the chapters on some of the rarer skin diseases, add materially to the value of this volume over preceding editions. The bibliographic references show evidence of the most careful research of dermatologic literature and are of great value to dermatologists. The revision and enlargement which this edition has undergone brings it up to date and keeps it in the front rank as a text-book for both students and practitioners.

PRACTICAL DIETETICS WITH REFERENCE TO DIET IN DISEASE. By Alida Frances Pattee, Graduate Boston Normal School of Household Arts. Second Edition, Revised and Enlarged. Cloth. Pp. 312. Price, $1.00 net. Published by the Author, 52 W. 39th St., New York City. 1904.

The second edition of this practical little work on dietetics shows evidence of careful revision. It possesses value to the physician as a reference book, to the nurse as a text-book and handbook and to the housewife who wishes to exercise care in the matter of diet. It is simple, brief and practical.

Miscellany.

Indexing of Current Medical Literature Abroad.—In Russia the *Russkii Vratch* makes a specialty of carrying the complete index of the prominent medical journals of the world, with a line or two of descriptive text with each title, but no abstracts in this department. In Germany the *Deutsche medicinische Wochenschrift* follows this plan, but has recently inaugurated the system of classifying the titles by subjects, and thus it is impossible to learn the actual contents of any one journal except by going over the entire list. Unless very ably edited, as in this *Wochenschrift*, this system would cause many mistakes, as an improper classification would cause the title to be lost. The *Münchener medicinische Wochenschrift* follows practically the system in use in THE JOURNAL, but restricts it to German periodicals. It is supplemented by semi-occasional reviews of current literature in France, England and eastern and southeastern Europe, abstracts being given of the articles deemed important, but no mention of the titles of other articles. This does not differ materially from the system followed in THE JOURNAL, by which the foreign journals not included in the Index are reviewed and abstracts of the important articles are published as Miscellany. In France the *Semaine Médicale* aims to publish the bibliography of the leading articles in current periodical literature, giving the titles alone, classified, but as it devotes only a given amount of space to it and uses large type, there is not room for a complete list. A number of the specialist journals abroad publish a full index of articles on their specialty, the *Annales de Dermatologie* having adopted the convenient device of printing the classified bibliography on the back of the advertising pages and in the shape of cards, which can be cut out and arranged in a card catalog without further ado. The *British Medical Journal* and the *Lancet* make no attempt to index periodical literature, the former devoting merely four pages in each issue to abstracts without any attempt at system even in these. The German periodical literature is overwhelmingly larger than any other. This is due in large part to the fact that when a Russian, Japanese or Scandinavian physician has a communication to make to the world of science he sends it to some German periodical at the same time as he publishes it in his home journal. Physicians in the Latin countries of both continents send their communications to the French journals in the same way. The publishing facilities of the larger journals are so superior to those of the home periodicals that the communication generally appears complete in the former, while it is still dragging as a serial through the latter or has not yet seen the light, or it may be published simultaneously in two or more countries to obtain a wider circle of readers. A number not long ago of the *Deutsche med. Wochenschrift* is a striking example of this cosmopolitanism. The issue for June 9, No. 24, contains 12 original articles—one each from Russia, England, Norway, Holland, Hungary, Roumania, Egypt, Poland, Colombia, two from Italy and one from New York—the contributions of a single month.

Treatment of Bright's Disease by Restriction of Salt.—Widal's communication last year on the effects of "dechloridation" in kidney disease was rapidly followed by others demonstrating the benefits of the same measure in certain cases of cardiac edema and in heart affections in general. Huchard called attention to the fact that the polyuria induced by digitalis is accompanied by polychloruria, and Merklen found further that the polychloruria induced by this drug vanished with the edema. The action on certain ascitic effusions of therapeutic restriction of the intake of salt has also been established. Vincent, Laufer, Linossier and Hayem have since published accounts of its favorable action in certain cases of hyperchlorhydria. Jacquet has reported a favorable influence on the coryza of albuminuric subjects, and Ravaut has recently published that its action is most beneficent in certain cutaneous affections accompanied by exudation. Widal bases this mode of influencing Bright's disease on the discovery that in certain cases the kidneys become more or less impermeable to sodium chlorid. Under normal conditions an average of 15 gm. a day is ingested, and almost the entire amount is eliminated by the kidneys. In some of his tests he found that 30 gm. of sodium chlorid were thus eliminated through the kidneys in twenty-four hours. When the kidneys become impermeable to the sodium chlorid its retention in the tissues attracts the water into them by physical affinity. The kidneys may develop this partial or total lack of permeability for sodium chlorid long before any of their other eliminative functions are impaired. It is detected by daily determination of the chlorids in the urine, a very simple task, not necessitating the elaborate technic of analysis of the different chlorids, etc. The balance between the salt ingested and that eliminated through the kidneys is thus easily determined. The salt with which the food is seasoned is weighed beforehand each day, and the patient is weighed every morning at a given hour after having urinated. The amount of salt in meat, vegetables, unsalted bread, etc., amounts to about 1.5 gm. If 10 gm. of salt are used for seasoning he is thus taking 11.5 gm. He is weighed every morning, and if he increases in weight constantly or variably water is evidently being retained in the tissues to hydrate the salt not eliminated by the kidneys, and edema may be expected soon. If by restricting the amount of salt ingested to 5 gm. the patient's weight remains stationary, it is evident that his kidneys are able to eliminate this amount of salt. By testing the patient thus from day to day it is possible to establish the salt balance and watch it gradually return to normal. The efficacy of milk in kidney disease is due to its lack of salt, but it is no longer necessary to "burn the house down to get roast pork." The desired result can be attained by a diet as varied as the subject may desire, provided it contains only the proper amount of salt which his kidneys are able to eliminate at the time. The capacity of eliminating salt varies with the condition of the kidneys, and treatment by reduction of the intake of salt, of course, acts only on this element of the kidney affection. It does not pretend to cure the entire syndrome, as the chloruremia is by no means all the uremia. The physician may, however, rest assured in every case that this alimentary restriction of salt is perfectly harmless and without any inconveniences for the subject with Bright's disease. There is always enough salt naturally in the various articles of food to suffice for the physiologic needs of the organism. The amount taken above this is from an acquired taste, and is actually an abuse of this substance. A healthy man can tolerate this extra amount without harm, but any one with kidney disease should pay unceasing attention to the salting of his food, and should always avoid an excessive amount, as he never knows at what moment it may become exceedingly injurious to him. The above is a summary of Widal's address presented at the first meeting of the newly organized Société de l'Internat, at Paris, April 28, bringing the subject of dechloridation—of which he is the father—down to date.

State Boards of Registration.

COMING EXAMINATIONS.

New Mexico Board of Health, Santa Fe, December 5. Secretary, B. D. Black, M.D., Las Vegas.

Board of Medical Registration of the State of California, San Francisco, December 6. Secretary, Charles L. Tisdale, M.D., San Francisco.

Ohio State Board of Medical Registration and Examination, Columbus, December 13-15. Secretary, Frank Winders, M.D., Columbus.

State Medical Examining Boards of Delaware, Wilmington and Dover, December 13-15. Secretary, P. W. Tomlinson, M.D., Wilmington.

The Medical Examining Board of Virginia, Richmond, December 13-16. Secretary, R. S. Martin, M.D., Stuart.

Board of Medical Examiners of Maryland, Baltimore, December 14-17. Secretary, J. McP. Scott, M.D., Hagerstown.

Missouri State Board of Health, St. Louis University, St. Louis, December 19-21. Secretary, W. T. Morrow, M.D., Kansas City.

Iowa State Board of Medical Examiners, Capitol Building, Des Moines, December 21-22. Secretary, J. F. Kennedy, M.D., Des Moines.

Oklahoma Medical Examining Board, Guthrie, December 28. Secretary, E. E. Cowdrick, M.D., Enid.

Arkansas October Report.—Dr. J. P. Runyan, secretary of the State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock Oct. 11, 1904. The number of subjects examined in was 7; the total questions asked, 70; percentage required to pass, 75. The total number of persons examined was 20, of whom 15 passed and 5 failed. Among those who passed were 4 undergraduates and one person who did not give year of graduation. Among those who failed there were 2 who did not give date of graduation, 1 undergraduate and 1 not specified who attained a grade of 10. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
University of Maryland	(1879)	79
Arkansas University	(undergraduate)	75
Baltimore Medical College	(1898)	83
Med. Dept. Vanderbilt University	(1901) 91, (1891)	76
Memphis Hospital Medical College	(1892)	76
University of Nashville	(undergraduate)	76
Nashville Medical College	(1869)	77
Louisville Med. Coll	(undergraduate)	75
Rush Medical College	(——) 75, (1904)	83
University of the State of New York	(1894)	81
University of West Tennessee	(undergraduate)	83
Med. Dept. Ft. Worth University	(1902)	79
University of Leipzig	(1894)	81
FAILED.		
Illinois Medical College	(undergraduate)	55
Barnes Medical College	(1898)	73
Memphis Hospital Medical College	(——)	61
University of Tennessee	(——)	63
College unknown	(——)	10

Kansas October Report.—Dr. G. F. Johnston, secretary of the Kansas State Board of Medical Registration and Examination, reports the written examination held at Topeka Oct. 11-13, 1904. The number of subjects examined in was 11; total questions asked, 90; percentage required to pass, 75. The total number examined was 33, of whom 24 passed and 9 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Miami Medical College	(1882)	81
Creighton Medical College, (1895) 82, (1896) 75,	(1903)	79
Gross Med. Coll., Denver	(1903)	76
Kansas City Medical College	(1904)	77
Northwestern University	(1903) 85, (1904)	85
University of Michigan	(1869) 83, (1904)	85
Rush Medical College	(1902) 79, (1904)	79
Eclectic Med. Inst., Cincinnati	(1896) 80, (1897)	81
Eclectic Med. Univ., Kansas City	(1904)	85
University of Nashville	(1903)	75
Hering Med. Coll., Chicago	(1904)	75
University of Minnesota	(1904)	75
Ensworth Medical College, (1896) 75, (1899) 75,	(1904)	77
Barnes Med. Coll., St. Louis	(1903)	85
College of P. and S., Chicago	(1904)	84
Cornell University	(1903)	85
FAILED.		
University of Louisville	(1888)	74
Univ. Med. Coll., Kansas City, Mo. (1893) 73, (1903) 71,	(1904)	74
Ohio Medical College	(1880)	53
Eclectic Med. Inst., Cincinnati	(1900)	73
Rush Medical College	(1889)	71
Chicago Homeo. Med. Coll.	(1904)	72
Louisville Med. Coll.	(1904)	66

District of Columbia July and October Reports.—Dr. William C. Woodward, secretary of the Board of Medical Supervisors of the District of Columbia, reports the examinations held at Washington, July 14 and October 13, 1904. The number of subjects examined in was 17; total questions asked, 80; percentage required to pass, 75. At the July examination the total number examined was 49, of whom 43 passed and 6 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Columbian University, (1902) 82.69, 87.84; (1903) 89.54, 89.31; (1904) 83.53, 90.31, 87.97, 91.84, 85.53, 91.16, 79.31, 91.91, 91.37, 89.19, 85.53, 81.75, 88.06, 83.87, 88.97, 88.97.		79.09, 87.50, 77.66, 88.78, 88.75, 82.81,
Georgetown University, (1902) 7.84, (1904) 94.09, 94.37, 84.53, 82.41.		90.56,
Howard University	(1902) 76.41, (1904) 81.59,	91.91
Kansas Medical College	(1904)	83.34
Kentucky School of Medicine	(1891)	90.62
McGill University, Montreal, Canada	(1904)	91.53
Medical College of Virginia	(1898)	91.12
New York Homeopathic Medical College	(1904)	86.31
University of Maryland	(1904) 85.81,	78.50
University of Michigan	(1904)	84.78
FAILED.		
Howard University, (1903) 68.47	(1904) 73.72,	71.69, 69
University of Maryland	(1904)	52.75
University of Virginia	(1904)	72.59

The general average for all representatives of the Columbian University at the July examination was 86.6; for all representatives of Georgetown University, 87.4.

At the October examination the total number examined was 19, of whom 17 passed and 2 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Columbia University, New York City	(1901)	88.59
Columbian University, (1904) 91.60, 81.85, 83.16, 87.53, 91.19, 84.12.		84.12,
Georgetown University, (1902) 88.04, (1903) 86.75, (1904) 91.06, 80.66.		94.56,
Howard University	(1904)	79.04
National University	(1903)	93.913
Rush Medical College	(1901)	87.569
University of Michigan	(1902)	89.094
FAILED.		
Georgetown University	(1904)	67.544
Woman's Medical College of Pennsylvania	(1904)	73.944

The general average for all representatives of Columbian University, at the October examination, was 86.5; for representatives of Georgetown University who passed, 88.2.

Washington Report for January and July, 1904.—Dr. C. W. Sharples, secretary of the Washington State Board of Medical Examiners, reports the examinations held January and July, 1904. The total number examined was 182, of whom 135 passed and 47 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Coll. of P. and S. of San Francisco	(1891)	81
Cooper Medical College	(1890)	77
McGill University	(1903)	86
Toronto Univ. Med. Faculty, (1892) 71, (1899) 84,	(1903)	91
Trinity Medical College, (1897) 80, (1901) 83, (1902) 81, 75, 82; (1904) 81.		(1903)
Colorado School of Med. (State Univ.)	(1903)	74
Gross Medical College	(1896)	79
Univ. of Georgetown	(1891) 81, (1897) 77, (1903)	78, 80
Atlanta Coll. of P. and S.	(1889) 72*, (1894)	—†
Univ. of Heidelberg, Germany	(1903)	82
Univ. of Amsterdam, Holland	(1887)	83
American Med. Missionary Coll.	(1900)	—†
Bennett Coll. of Eclectic Med. and Surg.	(1898)	78
Coll. of P. and S., Chicago, (1878) 89, (1892) 82, (1902) 84, 76, 81; (1904) 88.		(1903)
Northwestern Univ. Med. School, (1887) 92, (1896) 83, —†, (1903) 92, (1904) 78, 84, 85, 87, 87.		(1902)
Rush Medical College, (1890) 70*, (1896) 75, (1894) 78, 89, —†; (1901) 80, (1902) 83, 84; (1903) 78, 86.		(1899)
The Chicago Homeopathic Med. Coll, (1894) 82; (1902) 85, 82, 83.		(1904)
Indiana Medical College	(1902)	83
Univ. of Iowa Med. Dept.	(1875) 75; (1904)	83
Kioto Medical College, Japan	(1893)	75
The Kansas Medical College	(1886)	82
Kentucky School of Medicine, (1896) 88; (1897) —†, (1903) 75.		(1899) 74,
Louisville Medical College	(1898)	75, 82
Baltimore Medical College	(1903)	—†
Med. Dept. of the Johns Hopkins Univ.	(1904)	87
Univ. of Maryland School of Medicine.	(1900) 79, (1904)	91
Harvard Univ. Medical School	(1901) 84, (1903)	82
Detroit College of Medicine, (1888) 70, —*, (1892) 87, (1902) 85, (1903) 83.		(1897) 76
Saginaw Valley Medical College, (1899) 76, —†, (1903)		83
University of Michigan, (1877) 71*, (1893) 73, (1897) 86, 86, (1902) 82, 87; (1904) 83.		(1899)
Med. Dept. Hamline Univ., (1897) 80, (1900) 78, (1903)		88
The College of Homeopathic Medicine and Surgery of the University of Minnesota, (1903) 85.		
The College of Medicine and Surgery of the Univ. of Minn., 81, (1893) 76, (1897) 76, (1903) 82, 84, 86; (1904) 78.		(1882)
Barnes Medical College, (1882) 23*, (1898) 79	(1904)	83
Kansas City Medical College	(1879)	75, 70*
Missouri Medical College, (1873) 70*, (1896) 81,	(1904)	85
St. Louis Coll. of Physicians and Surgeons	(1904)	89
The Marion Sims College of Medicine	(1897)	—†
University Med. Coll. of Kansas City	(1886)	78
Lincoln Medical College	(1897)	71
The John A. Creighton Medical College, (1902) 91,	(1904)	79
Albany Medical College	(1901)	85
Bellevue Hospital Medical College, (1876) 82, (1890) —†, 83, (1899) 84.		(1896)
College of Physicians and Surgeons in the City of New York. (1903) 82.		
Long Island College Hospital	(1904)	—†
Syracuse University, College of Medicine	(1896)	87
Med. Dept. of Western Reserve University	(1903)	86
Miami Medical College	(1904)	82
Ohio Medical University	(1891)	80
Starling Medical College	(1895)	82
Univ. of the State of Oregon, Med. Dept.	(1903) 81, (1904)	80, 83
Willamette University, Medical Department	(1904)	77
Dept. of Med. of the Univ. of Pa.	(1882) 87, (1902)	91
Hahnemann Medical College	(1902) 78, (1903)	86
Jefferson Med. Coll., (1896) —†, (1891) 83, (1897) 82,	(1903)	81
Vanderbilt University, Medical Department	(1884)	—†

*Old graduates, of 10 or more years standing. An average of 70 is required for passing. Others must attain an average of 75 per cent.

†Averages not recorded.

FAILED.		
California Medical College	(1902) 62, 67, (1904)	73
Trinity Medical College	(1902) 72, (1903)	73
Gross Medical College	(1900)	63
University of Paris, France	(1897) 61, (1900)	70
Georgia College of Eclectic Med. and Surg.	(1882)	59
College of P. & S., Chicago	(1902)	58
Harvey Medical College, Chicago	(1904)	70

Rush Medical College	(1897)	72
Indiana Medical College	(1904)	70
Univ. of Iowa, Medical Dept	(1901)	72, —†
Kioto Medical College, Japan	(1893)	45
Kansas Medical College	(1899)	63
Louisville Medical College	(1898)	—†
University of Louisville	(1900)	74, —†
Univ. of Maryland, School of Medicine	(1904)	68
Saginaw Valley Medical College	(1903)	70
University of Michigan	(1904)	61
Barnes Medical College	(1903) 67, (1904)	67
Ensworth Medical College, St. Joseph, Mo	(1903)	64
Hahnemann Med. Coll., Kansas City Univ	(1902)	67
Kansas City Med. College, (1896) 62, (1898) 61, —†, (1900)		—†.
Missouri Medical College	(1893) 63, (1896)	59
Central Medical College	(1898)	70
University Med. Coll., Kansas City	(1898)	42
Lincoln Medical College	(1902)	58
Omaha Medical College	(1880)	59, 64
Eclectic Med. Inst., Cincinnati	(1900)	72
Pulte Medical College	(1904)	60
Starling Medical College	(1895) 66, (1901)	70
Willamette Univ., Med. Dept	(1904)	70
Univ. of Penn., Med. Dept	(1897)	—†
Chattanooga Medical College	(1904)	69
Univ. of Tennessee, Med. Dept	(1889)	66
Name of College illegible	(1875)	24

The following questions were asked:

NERVOUS DISEASES.

1. Name three prominent symptoms of locomotor ataxia. 2. Of what condition is choked disc (optic neuritis) the most prominent and most valuable symptom? 3. What is aphasia? Also state in a general way with the function of what part of the brain its presence indicates. What part of the cerebrum is effective? 4. Make a differential diagnosis between the "Status Epilepticus" and uremic convulsions. 5. What are the two most prominent symptoms of Meniere's disease? 6. Give in general terms the prognosis of the following diseases, for ultimate recovery (but not as regards life and death: (a) migraine, (b) chorea, (c) locomotor ataxia, (d) infantile palsy, (e) cerebral palsy of infancy, (f) paralysis agitans. 7. Give the symptoms of the acute stage (or onset) of infantile palsy. 8. What is the result of apoplexy and the prognosis and course of the condition? 9. What facial condition is often associated with mastoid disease, and why? 10. What is sciatica? Give its etiology and symptoms.

MATERIA MEDICA.

1. Describe the action of digitalis on the heart and on the kidneys. 2. What are diuretics? Give names and doses of five. 3. Give the method of action of sulphate of zinc and apomorphia, in producing emesis. 4. Give the minimum and maximum doses for an adult of—(a) tincture of opium, (b) tincture of belladonna, (c) fluid extract of colchicum root, (d) fluid extract of gelsemium, (e) powdered digitalis, (f)) extract of hyoscyamus. 5. What ratio does hypodermatic dosage bear to that by the mouth? What ratio does rectal dosage bear to that by the mouth? Give an illustration of each. 6. What are two indications for the administration of strychnin? Indicate the proper dose. 7. Give the symptoms of carbolic acid poisoning and the treatment of the same. 8. What is the indication for ergot? What effect has it on blood pressure and why? 9. Name four preparations of mercury, their doses and therapeutic indications. 10. Name five hypnotics and their doses.

MEDICAL JURISPRUDENCE.

1. Differentiate in a blood stain: (a) mammalian, 1., menstrual. 2. hemorrahge, (b) avian. 2. What is atelectasis, how demonstrated, and what does it prove? 3. What is *contre coup*? 4. Bullet wound: Describe point of entrance and point of exit. 5. What is the difference in appearance of: (a) antemortem contused and lacerated wound, (b) postmortem contused and lacerated wound. What is cause of difference? 6. How demonstrate that death was caused by: (a) carbolic acid, (b) strychnia, (c) arsenic. 7. A stain is supposed to be caused by spermatic fluid. Give full demonstration. 8. Describe burns of various degrees. 9. Differentiate eruption caused by croton oil from that of measles, smallpox or other eruptive diseases. 10. Outline your method of performing a postmortem examination of the thorax.

ANATOMY.

1. Inferior carotid triangle: (a) boundaries, (b) contents, (c) relation of vessels. 2. Popliteal space: (a) boundaries, (b) contents, (c) relation of contents. 3. Describe origin and distribution of great sciatic nerve. 4. Give nerve supply of eye muscles. 5. Describe shoulder, knee or hip joint. 6. Describe the anterior abdominal wall. 7. Locate and describe the thyroid gland, with its most important relations. 8. Locate four of the principal motor centers in the cerebrum. 9. What structures would be seen on a cross section of the body at the level of the twelfth dorsal vertebra? 10. Describe the gall bladder and the bile ducts. Give their relations.

OBSTETRICS.

1. Name the bones of the pelvis. Give the diameter of the inlet and of the outlet. 2. What are the symptoms of pregnancy? Describe etiology; symptomatology and management of threatened abortion. 3. Give management of the normal antipartum parturient and the puerperal period. 4. What is prolapsus funis? How would you manage the same? What is hydrocephalus? How would you recognize and manage the same? 5. Describe placenta previa and your method of managing the same. 6. Give etiology, symptoms and management of a case of puerperal eclampsia. 7. How would you manage a case of retained placenta? 8. What do you understand by an hour glass contraction of the uterus? How is it recognized and how overcome? 9. What is phlegmasia alba dolens? Give symptoms, etiology and management. 10. Differential diagnosis between pregnancy and pelvic tumor.

PRACTICE.

1. What is chronic bronchitis? Give its causes. 2. Name the normal pulmonic sound in auscultation of the different regions of the thorax. Name the variations of the voice sound in pathologic conditions of the lungs and their causes. 3. What are complications, prognosis and treatment of acute rhinitis? What is chronic rhinitis and its pathologic anatomy? 4. Give causes and diagnosis of gastric ulcer. 5. Define hyperchlorhydria (hyperacidity), causes, symptoms, diagnosis and treatment. 6. Define Argyll-Robertson pupil and name the disease in which it is one of the diagnostic symptoms. 7. What is angina pectoris, its causes and with what conditions is it associated? 8. What are the varieties of aneurism of the aorta? Give symptoms and diagnosis. 9. What are the symptoms and physical signs of aortic regurgitation? When uncompensated? 10. What are symptoms, diagnosis and treatment of leucocythemia?

DISEASES OF THE EYE AND EAR.

1. Give diagnosis, treatment and prognosis of trachoma. 2. Give diagnosis and treatment of chalazion. 3. Describe the mechanism of accommodation, and how is accommodation measured? 4. Give diagnosis, prognosis and treatment of glaucoma. 5. Give causes and diagnosis of sympathetic ophthalmia. 6. Describe the normal appearance of the membrana tympani. 7. Give the diagnosis and treatment of acute otitis media. 8. Give cause, symptoms and treatment of eczema of the auditory canal. 9. What are the symptoms and treatment of necrosis of the ossicles? 10. Give diagnosis and treatment of aural polypus.

CHEMISTRY.

1. Describe and fully explain the chemistry of Fehling's sugar test. 2. Name three chemical tests for albumin. 3. Distinguish between ic and ous terminations. 4. Give formula of nitrate of silver and test for same. 5. What is an acid? Give names and formulæ of three used in medicine. 6. Write a chemical equation. 7. Define specific gravity. 8. Give difference between chemical and mechanical compounds and an example of each. 9. Give a simple method of estimating the amount of uric acid in urine. 10. Roughly estimate the total amount of solids in urine.

DISEASES OF WOMEN.

1. Define dysmenorrhea; give common causes. 2. Differentiate between uterine fibroids and carcinoma of the uterine body. 3. Give diagnosis and treatment of specific vaginitis. 4. Describe operations for laceration of perineum. 5. Give the technic of an operation for the relief of retroversion. 6. How would you prepare the abdomen for celiotomy? 7. Give diagnosis of hydrosalpynx. 8. Give causes and treatment of severe uterine hemorrhage. 9. Give cause, symptoms and treatment of cystocele. 10. How do you treat an incomplete abortion?

ECLECTIC MATERIA MEDICA.

1. What are the properties of lobelia inflata? (b) What tissues are influenced by it? (c) When is it indicated? 2. What are the five indications for remedial agents? (b) What classes of agents would you give to meet them? 3. Name five diaphoretics? (b) Name five diuretics. (c) Name five hepatics. 4. Give treatment you would employ in an aggravated case of chorea of three months duration in a child of ten years old. 5. Give treatment of a case of acute pleuritis with effusion. 6. Give treatment for catarrhal gastritis. 7. What agents would you employ in cerebrospinal meningitis? 8. Give a brief synopsis of your treatment of capillary bronchitis. 9. What would constitute your course of treatment of articular rheumatism? 10. Name five vegetable nontoxic nervines.

SURGERY.

1. How would you prepare the patient and field of operation for a laparotomy? What physical conditions would contraindicate general anesthesia? 2. Define a benign and a malignant tumor. Name three types of each. Give prognosis and frequent location of each of the latter. 3. Give prognosis and treatment of a non-united fracture of a long bone. 4. Give prognosis and treatment of a penetrating wound of the abdomen. 5. Give the etiology and pathology of the so-called hip joint disease. Give the symptoms and treatment of an incipient case. 6. Differentiate between an intracapsular fracture of the femur and a dislocation of the head of same. 7. Give the symptoms, diagnosis and prognosis of a fracture of the base of the skull. 8. At what age of infancy would you advise an operation for talipes; also cleft palate. 9. Give differential diagnosis between backward dislocation of the ulna and fracture of the humerus near the condyles. 10. Give the differential diagnosis between inguinal hernia and hydrocele.

DISEASES OF CHILDREN.

1. Give the best method of preparing cow's milk for a child one month old. How often do you feed and how much do you give at a time? 2. Give the symptoms and course of cerebrospinal meningitis. 3. Give the etiology, symptoms, course and treatment of infantile atrophy (marasmus). 4. Give etiology and treatment of tetanus neonatorum, and how is it to be prevented? 5. Give the etiology, symptoms and treatment of acute gastroenteric intoxication. 6. In a normal child what are the indications for weaning? 7. Describe the appearance of the tongue and pharynx in scarlet fever. Give three common sequelæ of scarlet fever and the means of prevention of each. 8. Give the differential diagnosis between diphtheric and follicular tonsillitis. 9. Give the complications and sequelæ of follicular tonsilitis. 10. What is your opinion of the condition sometimes called membranous croup?

PREVENTIVE MEDICINE.

1. How is the infection of yellow fever disseminated, and how may it be prevented? 2. On what does the infection of anthrax depend, and what is the method of prophylaxis? 3. What is glanders? How is it disseminated? What is its prophylaxis. 4. What is the source of infection of bubonic plague, its mode of distribution and its prophylaxis? 5. Scarlet fever: Give (a) method of dissemination, (b) are fomites dangerous in scarlet fever; if so, what would be the period of infection, if not disinfected?

PHYSIOLOGY.

1. Name the functions of the Rolandic region, and the order of its subdivisions, from above downward. 2. Describe and give the function of: (a) Red blood cell, (b) leucocyte, (c) fibrin. 3. Give the physiology of the fetal circulation. 4. What are the different types of respiration? What is meant by tidal, complementary, reserve and residual air? Give volume of each normally. 5. Name digestive ferments. Give complete digestion of starch, proteids and fats. 6. What is the function of the liver? Describe bile, and give physiologic function. 7. Describe the lymphatic system and its function. 8. Describe the circulation of the blood

through the heart. What is cause of first heart sound? Of second heart sound? 9. What do you understand by metabolism? 10. Give the functions of the tracts of the spinal cord as seen in a transverse section of the cervical region. Of the dorsal region.

HISTOLOGY.

1. Classify and describe ciliated epithelia, and give location of each. 2. Describe a cross section of long bone. 3. How does heart muscle differ from voluntary muscle in structure? 4. Describe lymph glands. 5. Describe the wall of an artery. 6. Give structure of a cross section of fallopian tube. 7. Does the nerve sheath or investing membrane cover the nerve axis at its termination?

HOMEOPATHIC MATERIA MEDICA.

1. Differentiate between the mental symptoms of hyoscyamus and stramonium. 2. Describe eye symptoms requiring argentum nitricum. 3. For what kind of troubles would you give viola adorata? 4. Give three remedies most frequently required in diphtheria, with indications for each. 5. Give three characteristic indications for muriatic acid. 6. What is the chief field of action for agaricus muscarius? 7. Differentiate between cannabis indica and cannabis sativa. 8. For what is baryta carb used? 9. Give three most important remedies for diabetes mellitus. 10. What is the chief characteristic for cuprum metallicum?

The Public Service.

Army Changes.

Memorandum of changes of station and duties of medical officers, U. S. Army, week ending Nov. 19, 1904:

Lynch, Charles, asst.-surgeon, sailed for Tokyo, Japan, on special detached duty.

Porter, Ralph S., asst.-surgeon, granted fifteen days' leave of absence.

Smart, Robert, asst.-surgeon, granted one month's leave of absence about November 21, with permission to apply for fourteen days' extension.

Appel, A. H., surgeon, ordered to return to Manila, P. I., for assignment to duty.

Bourke, James, asst.-surgeon, left Fort Sheridan, Ill, with Troops I and K, Eleventh Cavalry, en route to Fort Des Moines, Iowa.

Wolven, F. Homer, contract dental surgeon, granted leave of absence for two months.

Kellogg, Preston S., contract surgeon, granted leave of absence for one month.

McMillan, Clemens W., contract surgeon, granted an extension of ten days to his leave of absence.

Brewer, Isaac W., contract surgeon, granted leave of absence for one month.

Bell, Leonard P., contract surgeon, granted an extension of one month to his leave of absence.

Whinnery, Jean C., contract dental surgeon, granted an extension of one month to his leave of absence.

Branch, Frederick D., contract surgeon, relieved from duty at Fort Ethan Allen, Vt., and ordered to duty at Fort Wood, N. Y.

Hansen, Morris J., contract surgeon, granted an extension of one month to his leave of absence.

Havard, Valery, asst.-surgeon general, sails on special detached duty for St. Petersburg, Russia.

Navy Changes.

Changes in the medical corps, U. S. Navy, for the week ending Nov. 19, 1904:

Fitts, H. B., surgeon, ordered to the *Buffalo*.

Parker, E. G., P. A. surgeon, detached from the *Buffalo*, November 26, and ordered to the Naval Station, Tutuila, Samoa, and also to additional duty on the *Adams*, sailing from San Francisco December 1.

McLarty, C., pharmacist, detached from the Navy Yard, Norfolk, Va., and ordered to the *Soluce* temporarily, and thence to the Naval Hospital, Yokohama, Japan.

Brock, F. W., pharmacist, detached from the Naval Hospital, New York, November 25, and ordered to the Navy Yard, Norfolk, Va.

Farenholt, A., surgeon, detached from the *Monterey* and ordered to the *Raleigh*.

Young, R. M., asst.-surgeon, detached from the *Oregon* and ordered home.

Webb, U. R., asst.-surgeon, detached from the Naval Station, Cavite, P. I., and ordered home.

Mayers, G. M., asst.-surgeon, detached from the *Raleigh* and ordered home.

Hoen, W. S., asst.-surgeon, detached from the Naval Station, Cavite, P. I., and ordered to the *Oregon*.

Dykes, J. R., asst.-surgeon, detached from the *Rainbow* and ordered to the Naval Station, Cavite, P. I.

Cowan, J., pharmacist, retired, detached from the Naval Station, Port Royal, S. C., and ordered home.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending Nov. 16, 1904:

Gassaway, J. M., surgeon, granted leave of absence for four days from November 23.

Young, G. B., P. A. surgeon, granted leave of absence for one month, or so much thereof as may be necessary on account of sickness.

Grubbs, S. B., P. A. surgeon, granted leave of absence for six days from November 14.

Anderson, J. F., P. A. surgeon, granted extension of leave of absence for three days from November 16.

Currie, D. H., P. A. surgeon, to proceed to Merced, Cal., for special temporary duty.

Steger, E. M., asst.-surgeon, granted leave of absence for four days from Nov. 9, 1904, under Paragraph 191 of the Regulations.

Hallett, E. B., A. A. surgeon, granted leave of absence for two days from November 23.

Stearns, H. H., A. A. surgeon, granted leave of absence for thirty days from December 2.

Cook, B. J., A. A. surgeon, granted leave of absence for eighteen days from November 19.

Davis, H. E., pharmacist, Department letter of Oct. 13, 1904, granting leave of absence for fifteen days from Oct. 26, 1904, amended so that said leave shall be for twelve days only.

BOARD CONVENED.

Board convened to meet at the Marine Hospital, Port Townsend, Wash., Nov. 21, 1904, for the physical examination of an officer of the Revenue-Cutter Service. Detail for the board: P. A. Surgeon J. H. Oakley, chairman; P. A. Surgeon D. E. Robinson, recorder.

PROMOTIONS.

Asst.-surgeon Dunlop Moore commissioned as P. A. surgeon, to rank as such from June 4.

Asst.-surgeon Carroll Fox commissioned as P. A. surgeon, to rank as such from July 27.

Asst-surgeon Matthew K. Gwyn commissioned as P. A. surgeon, to rank as such from August 8.

Asst.-surgeon Chas. W. Voge, commissioned as P. A. surgeon, to rank as such from July 27.

REMOVAL.

C. E. D. Lord removed from the position of asst.-surgeon in the Public Health and Marine-Hospital Service, Nov. 15, 1904.

Health Report.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon General, Public Health and Marine-Hospital Service, during the week ended Nov. 19, 1904:

SMALLPOX—UNITED STATES.

Illinois: East St. Louis, Nov. 5-12, 8 cases, 1 death.
Michigan: Detroit, Nov. 6-13, 3 cases; at 50 places, Oct. 29-Nov. 5, present.
Missouri: St. Louis, Nov. 5-12, 13 cases, 1 death.
New York: New York City, Nov. 5-12, 1 case.
Ohio: Cleveland, Nov. 5-12, 1 case.

SMALLPOX—FOREIGN.

Austria-Hungary, Prague, Oct. 22-29, 13 cases.
Brazil: Bahia, Oct. 8-15, 11 cases, 3 deaths; Para, Oct. 1-21, 29 cases, 4 deaths.
France: Lyons, Oct. 22-29, 3 cases.
Great Britain: Leeds, Oct. 22-Nov. 5, 4 cases, 1 death; London, Oct. 22-29, 1 case.
Russia: Moscow, Oct. 15-22, 2 cases.
Turkey: Oct. 22-29, Alexandretta, 1 case; Beirut, present; Constantinople, Oct 23-30, 20 deaths.

YELLOW FEVER.

Cuba: Santiago, Punta de Sal, Nov. 8, 1 case.
Mexico: Coatzacoalcos, Oct. 29-Nov. 5, 3 cases, 2 deaths.
Venezuela: LaGuayra, Oct. 22, present.

CHOLERA.

Persia: Tabriz, Sept. 27-Oct. 2, 209 deaths.
Turkey: Bagdad and vicinity, Sept. 17-Oct. 1, 272 cases, 216 deaths.

PLAGUE—INSULAR.

Hawaii: Honolulu, Nov. 11, 1 death.

PLAGUE—FOREIGN.

Brazil: Bahia, Oct. 8-15, 3 deaths.
Egypt: Alexandria, Oct. 8-14, 2 cases, 1 death.
India, Karachi, Oct. 8-16, 9 cases, 11 deaths.
Mauritius: Aug. 5-Sept. 8, 31 cases, 20 deaths.

Medical Organization.

NEW ORGANIZATION WORK IN INDIANA.

BY J. N. M'CORMACK.

In accordance with plans made by the council of the Indiana State Medical Society, I have recently, as the representative of the American Medical Association, visited and addressed meetings of the county society officers and representative members in nine of the thirten councilor districts of that state.

As this is in a measure an extension of my duties in organization work, evolved as a seeming necessity in lieu of something better, which is probably to be adopted in other states, and as the experience was as interesting and instructive to me as it could have been to any of the others participating in these gatherings, and as the account may be made of practical value to others, it may be proper that the results of the trip and the impressions gained, go before the profession of the entire country.

The itinerary was so planned by the council that it was easy to go from district to district in regular order, and with the least possible travel and expense, but the place of meeting within the district, and all details as to arrangements, were left to the discretion of the individual councilor. In some districts two meetings were held, one at one end of the district in the afternoon and another at the other end in the evening, but

usually some central and easily accessible place was selected and but one meeting held.

The date being fixed by the council, when the place was decided on, the councilor would send a cordial invitation to every reputable physician in the district, whether a member of his home society or not, to attend and take part in the meeting. This invitation was supplemented by special efforts on the part of officers of county societies looking to the same end, and the telephone was often effectively used on the eve of the meeting. In such invitations physicians were informed that the meeting was solely in the interest of the county society and of the individual physician, and that after my talk on the necessity, methods and advantages of organization, all present would be invited to make criticisms and ask such questions as would make the meeting a practical consultation between those informed and interested, as to the conditions and needs of the profession in each county. As a result of these combined efforts the attendance was large in some districts, and in all of them it was fairly representative, and I was able in a personal way, and with more or less effect, to reach the profession in nearly every county.

It was soon found here, as in other states, that the plans, purposes and possibilities of such a real and comprehensive organization of the profession as would make each county society an active, living force for the practical every-day benefit of every doctor and individual within the jurisdiction had been realized by few even of the officers, and sometimes only imperfectly by the councilor himself. When these were unfolded and made plain to them, and they learned what had actually been done elsewhere by a union of all the forces at the command of a harmonious profession, the interest and enthusiasm were most encouraging.

The criticisms and inquiries were abundant and intelligent, and often very far-reaching and instructive. These indicated clearly that while a society existed in nearly every county, many, probably a majority, existed only in name, the meetings being infrequent, the attendance small and irregular—and the influence on the profession and community unimportant. It was nearly always easy to detect the obstacles in the way of complete organization, as they were usually on the surface, and the remedy often indicated itself on a frank statement of the conditions. In some instances the county officers, and especially the county secretary, were not active or tactful, and in a few instances the councilors had fallen short of their duty.

On the other hand, many strong, and some almost ideal, county societies were discovered which had done better work than those in any other state so far visited by me. At Valparaiso, as an adjunct to the county society, a regular postgraduate course of instruction had been carried on for three nights of each week during the whole of last winter, and they had just completed arrangements for a similar course for the present season. This included an excellent course in anatomy, with demonstrations on the cadaver, and a practical course in chemistry. The society had become incorporated so that it could legally obtain ample anatomic material from one of the state prisons. It is hardly necessary to say that there was little trouble in maintaining the interest and attendance in such a society.

The society at Michigan City had worked out another problem which confronts the profession in many sections of this country. As a result of the dissensions which had come down to them as an inheritance from their forbears, fees had been so reduced as to seriously impair the usefulness of the profession. Even with those in most active practice the income was so small as to interfere with equipment and progress. Two years ago the profession was so organized that every licensed physician in the city, after full and patient consideration and conference with lay friends, agreed to a fair and equitable schedule of fees, which at once put them on a well supported basis, the night fees being placed high enough to prevent such calls except when actually necessary, and I was informed in the presence of the entire faculty that in the entire two years not a complaint had been made in or out of the profession, either in regard to this action or in carrying it out. Of course, this was not done as a society, but it was the direct outgrowth of the harmony and spirit of co-operation made possible by organization, and the benefits both to the profession, which was better supported, and to the community, which was better served—were so evident that there was no trouble in keeping up the attendance and interest in that county society.

The advantages of a district society, meeting annually, for an interchange of opinions and plans, was well illustrated in these two counties. Although adjacent to each other, neither one knew what the other was doing along the lines here outlined until they were brought together to meet me. Each expressed the intention of taking immediate advantage of the experience the other had gained, and the representatives from the other counties had the benefit of all of it plainly set forth as in practical operation. If the councilor district societies meet only once a year, half-way between the meetings of the state societies, and merge their proceedings into those of the county societies for that month, and have no dues, they have a distinct and useful place in our plan.

The hospitality of the Indiana physicians was constant and most gracious. Dinners, lunches or smokers for all in attendance were provided everywhere, and at South Bend an elaborate banquet was arranged. At Muncie a most pleasant innovation was made by the invitation of the wives and daughters of physicians to the dinner.

All in all the visit, while exacting and laborious, was a profitable and instructive one to me, and must result in good. I have since gone on similar itineraries which have been arranged for me in Wisconsin and Kansas, after which the other four districts in Indiana will be visited, as well as two or three counties in that state where special difficulties have been encountered.

Society Proceedings.

COMING MEETINGS.

American Medical Association, Portland, Ore., July 11-14, 1905.

Southern Surgical and Gynecological Association, Birmingham, Ala., December 13-15.

Western Surgical and Gynecological Association, Milwaukee, Wis., December 28 29.

American Public Health Association, Havana, Cuba, Jan. 9-13, 1905.

CHICAGO MEDICAL SOCIETY.

Regular Meeting, held Oct. 19, 1904.

The President, Dr. John B. Murphy, in the Chair.

Diabetes.

Dr. Edward F. Wells said that this disease is characterized by hyperglycemia and glycosuria, probably due to hypoglycolysis, from insufficiency of the pancreatic internal secretion. Glycosuria and diabetes are not synonymous. He mentioned the alimentary, nervous, renal, adrenal and diabetic forms of glycosuria. The essential cause is insufficiency of internal pancreatic secretion.

DISCUSSION.

Dr. Arthur R. Elliott stated that definite lesions of the pancreas have been found in 50 per cent. of cases of diabetes which have come to autopsy. Several authors have reported instances of undoubted pancreatic diabetes, in which there was no emaciation, but exceptions to the rule are so rare that Dr. Elliott reported two cases.

Case 1.—C. M., a schoolgirl, aged 21, consulted him in April, 1903. In November, 1901, sugar was first discovered in the urine; intense thirst, polyuria, polyphagia and menstrual irregularity were the symptoms at that time. The patient's normal weight was 142 pounds, and during the first eighteen months which elapsed after the discovery of the glycosuria, she gained eighteen pounds, attaining a maximum of 150 pounds, in spite of a strict dietary. When she consulted Dr. Elliott her weight was 148, she was of firm musculature, possessed a high color, well-rounded body curves and looked the picture of health. She complained of polyuria, excessive thirst and appetite, fatigue, dryness of skin and mucous membranes. There were numerous small furuncles and troublesome pruritus vulvæ; urine 82 ounces; specific gravity, 1,036; 3 per cent. sugar; diacetic acid and acetone were present. The patient remained under observation until a few days before her death from diabetic coma, December, 1903. During the period the glycosuria fluctuated between 1.5 and 3 per cent. Acetone and diacetic acid were constant urinary ingredients, betaoxybutyric acid being first positively demonstrated in May, 1903. At no time did the body weight suffer, and at the time of the patient's death stood at 142. No autopsy was procurable.

Case 2.—F. E., at the time of consultation, was passing 136

ounces of urine, containing 6 per cent. of sugar. There were traces of acetone, but no diacetic acid. Her normal maximum weight is 160 pounds, which, at the time of consultation, was reduced to 141. Regulation of the diet caused a rapid elevation of the body weight to 155 pounds. The patient has been under continuous observation for six months. Sugar elimination ranges between 1 and 2 per cent. on a limited starch diet (100 grams per diem). For the past two months acetonemia has been pronounced and diaceturia pretty constant; coma prodromes have once or twice developed. Despite the serious nature of the case and the probability of an early termination, the patient's weight has risen to 155, and she has the appearance of being in excellent health.

DR. JAMES B. HERRICK referred to the common teaching that a saccharine urine is one of high specific gravity. As a result many insurance companies direct their examiners to test for sugar only when the specific gravity is over 1015 or 1020. One should not fall into this error, but should remember that many a urine in true diabetes may for days and weeks at a time have a specific gravity of no more than 1018 or 1020. There are conditions under which the urine may have a much lower specific gravity than this and still be a saccharine urine. Von Noorden calls attention to the fact that preceding the period of glycosuria there is frequently a period of polyuria without sugar, and also following the period of glycosuria, when sugar is disappearing from the urine, there may still be an increased quantity, but of low specific gravity. If we happen to catch a patient just as the glycosuria is coming on, in the period of preglycosuric polyuria, or just as glycosuria is disappearing, we may find that a urine of low specific gravity contains sugar. Furthermore, the drinking of large amounts of water lowers the specific gravity, so that the patient may pass urine containing considerable sugar which still has a specific gravity of 1018 or 1020. Chronic interstitial nephritis, which occurs in the course of diabetes, lowers the specific gravity of the urine, and if a patient presents himself with the cardiovascular changes of this condition, with albumin and casts in the urine, the urine being of low specific gravity, we may carelessly forget to examine for sugar, so that we should make it a routine practice, even when we find a urine of low specific gravity, to test for sugar.

There is a certain type of diabetes that has a peculiar periodicity about it. He believes that we occasionally see sugar disappear from the urine spontaneously, even though the patient is rather careless as regards diet. The importance of recognizing this fact is seen when a patient consults a physician and says he has diabetes, and has been treated for it, and when one examines the urine he finds it sugar-free. It is easy for one physician to say that the other practitioner was mistaken in regard to the diagnosis, and to tell the patient that he is not suffering from diabetes. There is occasionally an unexplained periodicity about glycosuria as a part of true diabetes, just as in certain cases of nephritis for days at a time albumin is absent from the urine.

DR. FRANK BILLINGS stated that since studying Opie's contributions, not infrequently he has been able to elicit a history in these patients of disease of the gall tracts. He believes that there is a place for the surgeon in the treatment of diabetes, and specially in that form of the disease associated with the presence of gallstones in the gall tract, or a continued infection of the gall tract which can be removed by drainage. He agrees with Dr. Wells and others that "once a diabetic, always a diabetic," but he does not agree that this necessarily means that we should give a prognosis to patients of early death, because a patient, when once acquainted with his condition, may, by rigidly adhering to the hygienic treatment mapped out by his physician, live longer than his neighbor who has no diabetes. Two years ago von Noorden brought out as a therapeutic food test a combination of starches, chiefly in the form of oatmeal, of fats in the form of butter, and albumin in the form of egg albumin. For an individual weighing 150 pounds, von Noorden advises the use of 300 grams of oatmeal, to be mixed with 250 grams of butter, and 100 grams of egg albumin, the oatmeal to be steamed or boiled, and while hot to have the butter intimately mixed with it, and finally the whites of a sufficient number of eggs to measure about one hundred grams or three ounces to be mixed with them. One would think this mixture would be unpalatable to the patient, or indigestible, but the speaker said the contrary is true. So far he has used it in hospitals and private practice on seven patients, and no complaint has been made that it was disagreeable to the palate or dissatisfied them. Immediate improvement occurred in five; in two there was no improvement. In all apparently the conditions as to acidosis, presence of diacetic acid and acetone in the urine, were rather increased than decreased. In five of the patients not only was the acidosis increased, but the per cent. of sugar was either diminished or became immediately almost absent. A young man from the West, who suffered from diabetes, passed 3,000 c.c. of urine in twenty-four hours with 2 per cent. of sugar, but within thirty-six hours from the time he began the meal the urine was without a trace of sugar. While there was in the first twenty-four hours a little reaction with the appearance in the urine of a trace of sugar, still, while the patient was under observation in the hospital for ten days, the urine was practically sugar-free.

Dr. Billings placed a child on this diet early in June of this year; until September the sugar entirely disappeared from the urine and the child gained nine pounds in weight. After being two months on this diet she began to complain and wanted something else to eat. The mother allowed the child bread in place of oatmeal, with egg and a light diet, and immediately the sugar began to appear in the urine. The child was again put back on the von Noorden diet, and the sugar disappeared. Not only has he used it since von Noorden's announcement for a therapeutic test, but as a steady diet for a month longer in some individuals, with not only the disappearance of the sugar, but improvement in the nutrition of the patient.

The good physician watches his patients carefully, measures the urine, and if he finds that on a rather strict diet the patient is losing weight, he adds to the diet something which will enable the patient to increase in weight rather than to continue a diet which means less sugar, but less in weight of the individual, for invariably as an individual decreases in weight there is coincidental with it, but not related to it in any way, acidosis and increase in diacetic acid and acetone, and consequently the case passing on toward coma.

DR. ALFRED C. CROFTAN said that a radical change of front has occurred within the last few years in regard to the administration of carbohydrates and sugars in diabetics. Many cases of acetonuria, diabetic and otherwise, will stop excreting acetone and its precursors and congeners, if a certain amount of carbohydrate is given. In cases of severe acidosis, particularly in patients who have been on a carbohydrate free diet for a long time, it is good practice, in impending coma, to give sugar. He goes further than that, and in extreme cases of coma, in which one is resorting to hypodermic or intravenous injections of sodium bicarbonate and alkalies, he has been in the habit of injecting directly into the veins, together with carbonate solution, a sugar, preferably levulose, and he believes in some cases that the recovery from the coma was due in part to the administration of this carbohydrate. He does not believe, however, that the statistics of the von Noorden diet are so favorable as those mentioned by Dr. Billings. In his experience he has had some good results, and one bad one, and believes the poor result was attributable in part to the administration of the oatmeal. After stopping the oatmeal, sometimes a large amount of acetone is found in the urine which is out of all proportion to that found in any other disease accompanied by acetone. One need not be afraid of this. Not only oatmeal, but any of the ordinary starches, such as potatoes, rice or bread, can be utilized largely in this sense, provided care is taken to give a particular carbohydrate alone. He warns patients to take either oatmeal alone, or potatoes or rice alone, but not to take rice and oatmeal together, or oatmeal and potatoes together. The same effect is produced in some cases by the single administration of one carbohydrate.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Regular Meeting, held Oct. 26, 1904.

The President, Dr. Roland G. Curtin, in the Chair.

Typhoid Fever Complicated by Appendicitis.

Dr. Moses Behrend reported a case of typhoid fever of a rather severe type; in the third week of the disease the patient developed symptoms of perforation which at operation were found to be those of appendicitis. He recovered from an operation and ten days afterward was tapped for pleurisy with effusion. About fourteen days after this he developed pneumothorax. The patient made a fine recovery.

DISCUSSION.

Dr. L. J. Hammond said that he thought that the case illustrated the fact, now generally admitted, that appendicitis occurring in the course of typhoid fever is entirely coincident, and in no way connected with the typhoid process, and that the majority of cases of appendicitis occurring in the course of typhoid fever are recurrent attacks. Given a case of typhoid fever with the early symptoms of pain, rigidity and other symptoms of appendicitis, one should suspect the presence of a large amount of adhesions, and if the symptoms are severe the surgeon is justified in operating at once. The removal of the appendix, breaking up of adhesions and liberation of the coil of intestines will lessen the possibility of typhoid perforation.

Dr. W. H. Teller considers that notwithstanding the fact that the mucous coat presented all the symptoms of typical catarrhal appendicitis, the condition was that of preperforative typhoid, with involvement of the peritoneal covering of the appendix by extension and not a case of pure appendicitis.

Dr. J. Allison Scott stated that there are several varieties of inflammation of the appendix in typhoid fever. Reviewing the literature of the perforation of the bowel, and collecting statistics of the hospitals of London and suburbs and of the Pennsylvania Hospital, he has found 382 cases of perforation, seventeen of which were in the appendix alone and due to ulceration from within. There is another type, in which during the course of the typhoid fever, or during the convalescence, acute inflammations of the appendix have been set up, not due to ulceration within the appendix, but from the appendix becoming gangrenous and perforating in the ordinary form of appendicitis. Dr. Scott is inclined to believe that if cases of perforation of the bowel are studied carefully it will be found that the appendix is involved more frequently than is thought.

Dr. Astley P. C. Ashhurst believes that there are several varieties of appendiceal inflammations during typhoid fever. That they may be distinguished by the different symptoms he does not think is possible. In the early stage of typhoid fever there may be constant pain, vomiting and a certain amount of shock, with rigidity over the appendix. At operation there may be found infiltration of the appendix and an appendicitis, the probability being that these are only typhoid lesions in the appendix. Later, the same conditions may be present through perforation of ordinary inflammation of the appendix. The inflammation, he believes, will so obscure the typhoid lesions that to distinguish one from the other would hardly be possible.

Dr. Behrend declared his belief that the case was one of pure appendicitis, due to the extension of the inflammation resulting from a case of pure typhoid fever. As interesting facts connected with the case Dr. Behrend stated that of five nurses connected with the case, one contracted typhoid fever and recovered while another contracted appendicitis and died from peritonitis. The patient's wife contracted typhoid fever and recovered.

The Trend of Modern Prescription Writing.

Dr. M. Clayton Thrush read a paper on this subject which will be printed in full in The Journal.

DISCUSSION.

Dr. S. Solis-Cohen asked what Dr. Thrush meant by "therapeutic incompatibility." Aconite and digitalis, or nitroglycerin and strychnin are to a certain extent incompatible, yet under some circumstances may be given together. He also asked the meaning of the expression "proprietary preparation." Squibbs' ether, he said, is a proprietary preparation, and so is antikamnia, yet there is a considerable difference between the two.

Dr. Thrush replied that by therapeutic incompatibility he meant the combination of those ingredients which from a therapeutic standpoint were directly antagonistic, and in which the action of the drugs would be particularly antagonistic. He had met two instances in which aconite and digitalis had been used, but he felt that it had been done for a certain object. The question of proprietary preparations was one considerably confused in the minds of all. His reference was to those preparations of which the chemical or pharmaceutic composition is known, but which are dispensed by some particular chemical manufacturer, who has a copyright for that preparation which no one else can use.

The Relation of the Physician to the Bureau of Health.

Dr. S. W. Newmayer said that in the word "co-operation" are gathered all the duties of the physician to the bureau of health. There should be no need of legally calling some physicians to account for failure to report cases of contagion in order to set an example to other physicians. He made a plea for a more accurate and an earlier diagnosis by laboratory methods, and for a postgraduate course in the clinical diagnosis of the more common communicable diseases. The bureau of health, he believes, should have under its supervision a series of lectures and demonstrations by competent teachers, which physicians should be invited to attend. It should be compulsory for all medical students to attend lectures on contagious diseases and to see cases in the city hospital. There should be given to each graduating class one or more lectures on the duties of a physician to the bureau of health, explaining what diseases to report and the best means to protect the public. To lessen the mortality from tuberculosis there should be a practical and concerted plan of education, as well as a report of cases of tuberculosis. Every physician should impart the principles of domestic hygiene to those to whom he is called in his daily work. The consideration of simple lessons on contagious diseases should be borne in mind by physicians having the revision of school text-books. To lessen the infant mortality, largely caused by impure milk and improper food, the physician, trained nurse and even the public should be taught a few practical and simple tests for impurities in milk.

DISCUSSION.

Dr. Edward Martin, director of public health, said that the desire of the bureau of health is to help the medical profession, to act as its agent, and not as a foreign intervention. The bureau asks the help of the profession and is ready to give its assistance in return. He referred to the corps of young men instructed in the work, every man of which had been a hospital resident, had had a special course in contagious diseases and, in other directions, had been fitted for the work. Dr. Martin said that one can not teach all men tact and judgment; one can make many men wise, but can not make all men sensible. The underlying spirit of every man in the corps, however, he said, is to help, and to stand by the profession, and not to interfere.

Dr. Randolph Faries stated that many cases of contagious diseases are never reported, because the families can not employ a physician. These usually come under notice by accident. The solution of this problem is of vital importance.

Dr. Kate W. Baldwin said that she would be grateful for the solution of this problem; many such cases appear at the dispensaries and it is almost impossible to make cultures and to watch the patients. They have no family physicians, and they are frequently found playing with other children in the alleys, and are found to have diphtheria.

Dr. Andrew A. Cairns said that it is contrary to the methods of the bureau of health for a medical inspector to examine a patient. The only examination required is at the termination of the disease, when the inspector is to see all cases before ordering fumigation; any mistakes between the medical inspec-

tor and the attending physician should be corrected as early as possible.

DR. HENRY BEATES said that he thinks it possible to devise some ethical means to establish the proper relation of the physician to the bureau of health.

DR. ANDREW A. CAIRNS stated that there are only two diseases on which the bureau of health requires the medical inspectors to make diagnoses: smallpox and chicken-pox, and that if a medical inspector makes himself obnoxious it is not done under orders.

DR. WALTER S. CORNELL referred to the methods of disinfection of houses and of the giving of antitoxin at the hands of the bureau of health.

DR. HENRY BEATES pointed out as important the need for some rule or law by which a responsible physician, the moment he is in contact with an infectious disease, can control the family until the board of health can act.

DR. I. VALENTINE LEVI said that the fact that the board of health should carry out the disinfection, unless the physician obtain special permission to do so, has been the source of much trouble between the medical inspector and the physician. The family physician tells the family to burn some sulphur and that the board of health will not need to do anything, and when the medical inspector appears and insists that the house be disinfected he gets all kinds of beautiful appellations. In one instance the medical inspector was reported to the central office as doing everything possible against the medical profession. He felt that the physician should tell the patients that the house must be disinfected by the board of health, unless he orders otherwise.

DR. S. SOLIS-COHEN regards as important the question of what is to be done with patients suspected of having diphtheria, until a culture is made. He believes it the duty of the physician, whether in his office or in the dispensary, to disinfect the throat promptly when there is any question in diagnosis. His experience with the board of health and its inspectors leads him to declare that there need be no trouble if both sides are willing to act as human beings who recognize their own liability to make mistakes. Occasionally an officious or tactless inspector has done or said something in the household of a patient to which he felt he could take reasonable objection, but he has always found that communication with the superiors of such a man has been the means of having him so instructed that he does not repeat the error elsewhere. He believes that each physician should be prompt and unsparing in the direct report to the chiefs of the bureau of health, of any dereliction, or seeming offense, on the part of their inspectors. Sometimes it will be found that the physician has been misinformed by the patients. He feels that the bureau of health is deserving of all the support and advice that can be given by the medical profession.

DR. JAY F. SCHAMBERG agreed with Dr. Cohen that there are many instances in which both patients and physicians are misrepresented. He knows that the average ability of the members of the board of medical inspectors in the detection of contagious diseases is of a very creditable standard, and is bound to increase. He believes that the medical profession has full confidence in the bureau of health, and that the subject should be approached with a little more charity on both sides.

Travel Notes.

XVII.

MADRAS MEDICAL COLLEGE AND GOVERNMENT GENERAL HOSPITAL.

NICHOLAS SENN, M.D.
CHICAGO.

CALCUTTA, INDIA, Sept. 17, 1904.

India with its 300,000,000 inhabitants has only four medical colleges, located at Madras, Calcutta, Lahore and Bombay. All of these medical schools are in affiliation with the respective universities. On recommendation of the medical faculties the universities confer the degrees, but the medical schools receive no financial aid from the universities and set their own standards of requirements for admission and graduation. All the medical schools are patterned after those of the United Kingdom as to requirements for admission, graduation and methods of teaching. From information obtained from different sources I find that the great stumbling block of the Indian medical student is language. A knowledge of Latin is a *rara avis* and the meaning of ordinary English words is hard for them to express and comprehend. The teachers find this imperfect knowledge of the English language the greatest drawback in ingrafting their ideas into the minds of the students. The number of medical students in the different institutions at the present time is about 2,000. Very few Mohammedans study medicine; the great majority of students are Hindus and Parsees. The Hindus are said to be the brightest students. The classes have increased in size very rapidly during the last few years, so rapidly, indeed, that space and equipment in all of the schools have become entirely inadequate. From what I have seen of the students in the different medical colleges I have become impressed with their lively, cheerful dispositions and their earnest devotion to their work. The teaching force, as a rule, is inadequate in number in all the schools, and in consequence the men are overworked. I will give only one striking instance of this kind. Lieutenant-Colonel Dimmock of Bombay is director of the Jamsetjee-Jeejeebhoy Hospital, principal of Grant Medical College, and professor of obstetrics, gynecology and diseases of children. Enough work for five men under ordinary circumstances. The men of the Indian medical service who are engaged in medical teaching are overworked and underpaid, and they are the men who do more for India than any other class of men.

MADRAS MEDICAL COLLEGE.

The Madras Medical College was originally established as a medical school in 1835 (Fig. 1). The classes received their instruction at first in rooms adjoining the quarters of the surgeon general of the general hospital. The main building of the school was opened in 1836 and then consisted of four apartments—a theater or lecture room, a library, a museum and a laboratory. The school commenced with a teaching force of seven, 10 medical apprentices and 11 native medical pupils. Private students were first admitted in 1838. They obtained, in common with government students, a free education. In 1851 it became a college, and in 1857 it was placed in the list of affiliated institutions. The buildings were altered and enlarged in 1867. In 1885 separate anatomic buildings were erected, to which were added a theater with a dissecting room for the pupils of the hospital assistant department and a museum in 1887-88. Separate buildings for biologic and hygienic laboratories followed. In 1875 the college admitted on its rolls three new classes of students—viz., candidates for the degree of licentiates in medicine and surgery, for the new grade of civil apothecary, and female students. The system of free education for the students of the college department was abolished a year before this department had been closed, in order to allow the professors to devote themselves to the teaching of subordinates for the service of government. For the second time the hospital assistant department was transferred to the auxiliary medical school at Rāyapuram in 1903. The principal of the college at the present time is Lieut.-Col. J. Maitland, M.D., I.M.S., F.M.U. The teaching staff consists of 23 professors and assistant professors, and the number of students is 400. Major G. G. Gifford, I.M.S., is professor of surgery, and Miss V. Adams, M.B., lecturer in midwifery to female students. The calendar of the college for 1904-1905 contains the following regulations:

DRESS—FOR NATIVES ONLY.

1. The typical dress.—Turban, a long or short coat buttoned up to the neck, trousers, socks and English shoes. Underclothing according to choice, but where the material of the coat is not washable, e. g., tweed, a linen collar should be

worn, and, if the coat does not button up to the neck, collar and tie must always be worn, whatever the material. The Parsee hat and Burman head cloth are, for the purposes of these regulations, to be regarded as turbans.

2. Modifications permissible. (a) Students who wear a "tuft" or who shave the scalp, must wear a turban which must conceal the tuft when it is present. (b) Students who dress their hair after the European fashion may wear caps, but indoors, if their dress is otherwise European, the cap

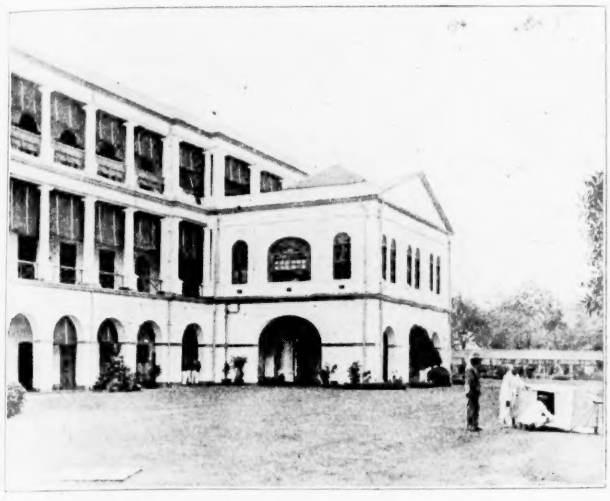

Fig. 1.—Madras Medical College and Government General Hospital.

must be removed. (c) A cap when worn must be black and may have a lace border, but not otherwise decorated—and no caps are allowed to be worn on ceremonial occasions, such as prize distribution, etc. Mohammedans may be allowed to wear the fez on ordinary occasions, but not at ceremonial observances. (d) Any student may wear a dhote or mundu; he must then go barefooted indoors or wear socks and European shoes. The latter are recommended, as the feet are apt to get soiled or inoculated with septic matter either in the hospital wards, dissecting rooms or out-patient rooms.

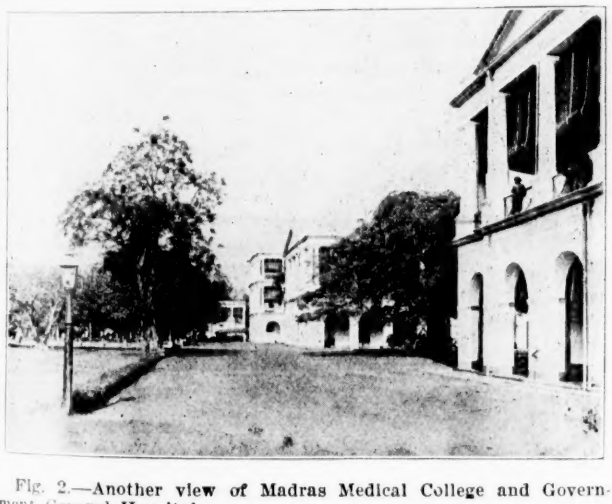

Fig. 2.—Another view of Madras Medical College and Government General Hospital.

3. All articles of dress, whatever the material, must be clean.

This dress regulation must certainly interest our American students, as even with these restrictions the sight of a class of students of the medical colleges of India is a very much checkered and picturesque one, probably made up of more colors than the checkered coat of Joseph. The candidates for the M.B. and C.M. section must have passed the first examination in arts of this university, or an examination accepted by the syndicate as equivalent thereto. The course of training for this class extends over five years, and the fees charged for tuition are:

	Rupees.	
For the first year of study	100	($32.00)
For the second year of study	155	(49.60)
For the third year of study	155	(49.60)
For the fourth year of study	100	(32.00)
For the final year of study	100	(32.00)

Or if paid in one sum on joining college, 500 rupees, equivalent to about $160.

The course for the L.M. and S. degree extends over four years and the fees charged for the whole course if paid in advance amount to 470 rupees ($150). The candidates for these degrees are obliged to pass only three examinations. The first examination includes one course in each of the following branches: Anatomy, physiology, chemistry, practical chemistry, practical pharmacy, histology. The second includes one course in medicine, surgery, materia medica and therapeutics, general pathology, practical pathology and bacteriology, hygiene, practical hygiene, medical jurisprudence, minor surgery. The third and final examination includes midwifery and diseases special to women and the newborn child, ophthalmology, mental diseases and operative surgery. The examination test for the degree of M.B. and C.M. is much more severe. Provision is made for the education of military pupils for the Indian subordinate medical department, colonial apprentices, apothecaries, male and female, and chemists and druggists. As an inducement for diligence on the part of the students the Madras Medical College offers annually nine medals, eleven prizes and ten scholarships.

Fig. 3.—Chondrosarcoma of humerus and scapula. Successful interscapular amputation performed by Captain Niblock, I. M. S. of Madras.

MADRAS GOVERNMENT GENERAL HOSPITAL.

This institution is intimately connected with, and in fact is, the clinical part of the Madras Medical College (Fig. 2), all of the attending physicians and surgeons being members of its faculty. The hospital is made up of a number of two-story pavilion buildings around a capacious square court orna-

mented with tropic trees, shrubs and flowers. The buildings harmonize with each other. It can accommodate 450 patients. The amount and variety of clinical material in this institution is simply enormous. The operating theater, while not up to all of the modern requirements, is one of the best in India. Chloroform is the routine anesthetic. The favorite suturing material is silk and silkworm gut, as the use of absorbable sutures has given rise to many disappointments. Biniodid of mercury is the favorite antiseptic for hand and surface disinfection and sterilized gauge is used for dressing wounds. I found a great many emergency cases in this hospital, fractures and accidental wounds, as well as a number of cases of abscess of the liver recently operated on. Among the most important cases was a man who was admitted into the hospital a few days previously with a strangulated inguinal hernia of four days' standing. Professor Giffard performed the operation. The bowel was gangrenous. Enterectomy was done, the continuity of the bowel restored by suturing and the patient is recovering without having shown any untoward symptoms since the operation. Although inguinal hernia is met with quite frequently in Madras, femoral hernia is very rare, only one case being admitted to the hospital during the past 20 years. (Giffard.) Elephantiasis of the scrotum is very frequently operated on in this hospital (Fig. 4). Lieut.-Col. Maitland has performed this operation 160 times with most excellent immediate and remote results. Stone in the bladder is very common in this part of India. Crushing is the favorite operative procedure. Many surgeons, among them Professor Giffard, prefer to perform the operation through a median perineal incision instead of the urethra and in case the stone is too large to be removed by this method it is extracted either whole or in fragments through a suprapubic incision.

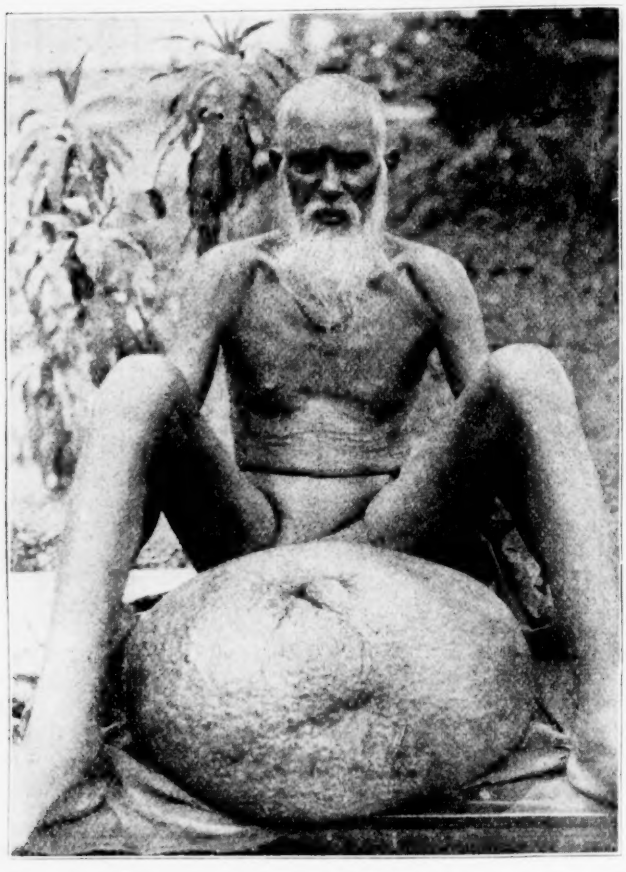

Fig. 4.—Elephantiasis of the scrotum weighing 61 lbs. Photograph used by courtesy of Captain Niblock, I. M. S.

CARCINOMA IN INDIA.

An unusual number of cases of cancer of the mouth find their way into this hospital and its frequency is attributed by the surgeons to betel chewing. Two pathologic forms are distinguished, the papillomatous and ulcerative, the latter being much more malignant and pursuing a very acute course. Capt. W. J. Niblock, I.M.S., surgeon Government Hospital, has contributed a very important article to the literature of "Cancer in India," published in the *Indian Medical Gazette*, May, 1902. The paper is based on the clinical records of this hospital. He has the following to say regarding betel chewing as a cause of carcinoma of the cheeks and jaws: "On looking at Table 1A one can not avoid being struck very forcibly by the enormous number of patients shown as admitted for carcinoma of the cheek and jaws. Carcinoma of the cheek alone accounts for almost one-third, and carcinoma of the cheek, jaws and tongue taken together for more than one-half of the total admissions. The cheek is the part most commonly affected in Hindus and Mohammedans, males and females. The disease affects the buccal surface of the cheek, generally commencing opposite the teeth of the lower jaw and spreading with varying rapidity. The frequency of carcinoma in this situation is, in my opinion, due to the chewing of 'betel,' a common habit in this country, and indulged in, I believe, by almost all classes of natives. 'Betel,' as used in the Madras presidency, is said to be made up of the following parts: (a) The essential constituents, viz., 'betel' leaf, areca nut, and caustic lime (chunam). (b) Condiments, such as cloves, nutmeg, cardamons, cubebs. Dry powdered cocoanut and oil are also sometimes added. The above components are mixed in varying proportions, rolled up in a betel leaf, and placed in the mouth. They are then chewed and rolled about by the tongue and cheek for a period varying from 10 to 30 minutes and then spat out."

I can testify from observation to the universal use of betel both in India and Ceylon. Carcinoma of other parts of the body appears to be more rare than in our country. The tables of Capt. Niblock show, for instance, that 513 cases of carcinoma of the mouth were admitted to the General Hospital during 10 years, 1892-1901, and only 44 cases of carcinoma of the breast and 19 of the lip. Concerning the latter location he says: "Epithelioma of the lip, it will be noted, is comparatively rare, and, so far as my experience goes, affects both lips with equal frequency. The rarity of carcinoma in this situation is no doubt explainable by the fact that smoking from a pipe (or at any rate a clay pipe) is not indulged in by natives of this country." The comparative frequency of carcinoma of the upper lip referred to by Capt. Niblock stands almost isolated as a clinical observation and constitutes a very important contribution to the topography of carcinoma as it is observed in India. Hundreds of cases of carcinoma of the lower lip have come under my observation and only a single case of carcinoma of the upper lip (Fig. 3).

ABSCESS OF THE LIVER.

In visiting any of the large hospitals in India one is sure to find a few cases of abscess of the liver, and yet Capt. W. J. Niblock says the disease is not so frequent as is generally supposed. (Notes on operations for abscess of the liver, ascites, and gallstone. *Indian Medical Gazette*, November, 1903.) In looking through the reports of the Madras General Hospital, he found that, during the ten years, 1893-1902 inclusive, only 154 cases were operated on and during the last three years the average annual admissions were at the rate of 63,591. Of the 154 cases recorded, 21 were shown to be multiple, all of whom died. There were 53 deaths among the 133 other cases, several of which were, however, probably multiple, as some of the surgeons who performed the operations made no distinction between single and multiple abscesses in their records. Capt. Niblock reports the result of 29 cases of abscess of the liver operated on by himself from March 25, 1899, to Sept. 21, 1903. All the patients were males, their ages ranging between 24 and 70. The racial distribution was as follows: Hindu, 19; Eurasian, 3; European, 5; Mussulman, 2. Out of the 29 cases five were multiple, all of whom died. Among the remaining 24 there were six deaths, that is, the mortality was 25 per cent. All of the abscesses con-

taining less than 20 ounces of pus at the time of operation recovered. In the treatment of this affection the author of the paper emphasizes the importance of a preliminary exploration of the liver by means of a long needle and syringe.

His directions for exploring the liver are as follows: "If a distinct prominence be felt or seen, the needle is first introduced at that situation. Where no such prominence exists, the needle is usually introduced into the liver through the ninth or tenth intercostal space. After the liver has been pierced, the piston of the syringe is drawn back for an inch or so, leaving a vacuum. Should pus now enter the syringe, the latter is detached, leaving the needle sticking in the liver to act as a guide. If no pus be found, the needle is gently pushed upward, inward and slightly backward, this being the most likely direction in which to strike pus. It is gradually withdrawn if no pus is found, and reintroduced in another direction. Five or six different parts of the liver are thus carefully explored before the case is sent back with a negative result." The exploration is made under an anesthetic and if pus is found the operation is performed at once. After resection of about two inches of the ninth or tenth rib in the axillary line the liver is exposed by an incision. If adhesions are present the liver is incised at once; if there are no adhesions a strip of gauze is carefully packed all around the proposed line of the visceral incision. Sutures are never used, as they tend rather to favor than prevent the escape of pus into the serous cavities. With a small scalpel the capsule of the liver is incised. If the abscess is deeply situated a sinus forceps is pushed through the liver substance into the abscess, followed by the index finger and the needle is then withdrawn and one or two Keith's glass drains inserted. After evacuation of the pus one or two large fenestrated rubber drains are substituted for the glass drains and a large aseptic absorbent dressing applied. Washing out of the cavity with antiseptic solutions is abstained from, although the operator has seen good results from the use of a solution of quinin, 1 in 60 to 1 in 80, as advised by Capt. L. Rogers, I.M.S.

The nursing in the Madras General Hospital is in charge of 28 trained female nurses, 51 male ward attendants and 21 female ward attendants. Twelve female nurses resigned during the year and gave their reasons for this step as follows: Left to be married, 6; left to train as midwife, 1; retired on pension, 2; retired on account of ill health, 2; retired for private reasons, 1.

The amount of available clinical material of this hospital is something enormous. During the last year the institution cared for 60,842 out-patients and 7,177 in-patients. The total number of deaths that occurred in the hospital was 644. Among the most frequent causes of death we find malaria, 48; dysentery, 46; tuberculosis, 83; diseases of liver, 38; diseases of the urinary organs, 40. Cholera is credited with 5 deaths. Only 5 deaths occurred from septic diseases acquired in the hospital. They were as follows: One case of sapremia, 1 case of septic peritonitis after enterectomy, 1 case of erysipelas after operation on tubercular glands of the neck, 1 case of cancrum oris occurring in a patient suffering from malaria, and 1 case of gangrene of the leg following the puerperal state in a debilitated woman.

Forty-eight deaths occurred in cases of septic diseases acquired outside of the hospital, namely, 16 from tetanus, 9 from cancrum oris, 9 from cellulitis, 3 from gangrene, 2 from sloughing after extravasation of urine, 1 from sloughing of scrotum, 1 from sloughing phagedena of the penis, and 7 from septicemia (two puerperal).

The total number of operations performed was 6,281, with a mortality of only 1.9 per cent. Among the more important operations were 43 for elephantiasis of the scrotum, with one death; 8 suprapubic cystotomies for stone, with 4 deaths, 1 death following a median perineal operation and 2 litholapaxies, with 1 death; 61 operations for hemorrhoids without mortality, 7 by ligature, 3 by excision and 51 by clamp and cautery; 10 operations for extravasation of urine, with 1 death; 700 operations for hydrocele by tapping, tapping with injection, incision and eversion of sac, excision of parietal part of sac and incision and drainage; 31 castrations without a death; 5 operations for prolapse of the rectum, with 1 cured, 2 relieved and 2 deaths; 26 operations for strangulated hernia, with 9 deaths, and 102 radical operations, with 3 deaths; 31 operations for abscess of the liver, with 3 deaths, and 15 exploratory punctures of the liver, with 1 death from hemorrhage; 6 exploratory laparotomies, with 2 deaths; 3 operations for intestinal obstruction, with 2 deaths; 5 excisions of the appendix, with 1 death, and 5 incisions for appendiceal abscess, with 1 death; 6 amputations of the thigh, with 1 death, and 10 amputations of the leg, with 1 death.

A few of the operations are of sufficient interest to entitle them to a more extended notice here.

ANEURISM OF COMMON AND EXTERNAL CAROTID ARTERIES.

The patient was a Hindu, aged 22 years. The pulsating swelling was first noticed a year ago and measured three inches in diameter at its widest part. Patient suffered from severe pain in the region of the swelling and on the right side of the head, slight dysphagia, paralysis and wasting of the right side of the tongue. The common carotid was ligated below the omohyoid, October 20. The pulsations in the swelling facial and temporal arteries ceased at once and never returned. The swelling steadily decreased in size, but as the progress was too slow to satisfy the patient it was later incised at his urgent request, the coagulated blood removed and, as no hemorrhage attended the operation, the wound was sutured without making provision for drainage and healed by primary intention.

HYDATID CYST OF TIBIA.

Operator, Captain Niblock. The patient, a Hindu vyot, aged 30, was admitted to hospital for a tumor of the upper end of the right tibia. He gave a history of the swelling commencing seven months before and gradually increasing; also of indefinite pain and weakness in the leg for two years. Pain never severe. The tumor on examination was hard, smooth, and fairly regular in outline, no eggshell crackling. The tumor was diagnosed as possible myeloid sarcoma, but on being incised it was discovered to be a hydatid cyst, containing about 10 ounces of fluid. The cyst wall was removed thoroughly and the bony shell of the cyst broken and turned inward so as to partially fill the cavity. He left the hospital cured in four months.

RHINOSCLEROMA.

The patient was an Eurasian, 21 years old, fireman by occupation, resident in India since birth, spent most of his time at Bhunda Ekhand, Jhansi. Admitted on July 30, suffering from most typical rhinoscleroma, affecting nose, palate and pharynx. No history of any member of his family ever having suffered from a similar complaint nor has he ever seen the disease in any other person. Three years ago he first noticed a small hard pimple on the skin of the right side of the nose about the middle; at the same time he suffered from occasional attacks of epistaxis. The hemorrhage stopped entirely after six months and has never recurred. The growth slowly but steadily extended until the greater part of his nose became affected, and then involved the upper lip, soft palate and pharynx. Captain Cornwall, I.M.S., isolated the bacillus, from which he made pure cultures and also rhinosclerin, which was tried without success. Large doses of carbolic acid and iodoform administered internally proved likewise useless. Partial excision and applications of formalin, and more recently the *x*-rays, have been tried, under which treatment the disease appears to have become stationary.

There are no gynecologists connected with the Madras General Hospital, the attending surgeons being in charge of all surgical cases regardless of sex. The hospital has nine private rooms, for which the patients are charged from 2 to 5 rupees a day (.64 to $1.60).

Bubonic plague cases occasionally find their way to Madras, but the sanitary precautions are so stringent that the disease has never gained a foothold here. Every stranger who arrives at Madras by boat or railway is kept track of by the police for 10 days, the maximum limit of the period of incubation of bubonic plague.

Therapeutics.

[Our readers are invited to send favorite prescriptions or outlines of treatment, such as have been tried and found useful, for publication in these columns. The writer's name must be attached, but it will be published or omitted as he may prefer. It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns without allusion to inquirer.]

Yeast.

Wainwright, in the *Central States Medical Magazine*, discusses the therapeutic application of yeast and quotes liberally from the French observers, who have experimented extensively with yeast in the treatment of various conditions. The author gives the following description of the physiologic action: Yeast is not sensibly affected by micro-organisms. It is found necessary, in order to provide the most advantageous medium for the development of yeast in the digestive tract, to give a liberal supply of sugar with yeast. After ingestion it is found that the motor activity of the stomach is decreased, that the production of hydrochloric acid is retarded, but that pepsin is present in sufficient quantities.

Large quantities produce diarrhea, vomiting, fever and coma. This is probably due to the evolution of carbonic acid gas and the poisonous effects of this gas. In animals abdominal distension and asphyxia are observed. Among the diseases attributed to the effects of alcoholic fermentation are dilatation of the stomach, acute gastrointestinal catarrh and chronic gastritis. It is recommended that yeast is efficacious in the acute and chronic forms of gastroenteritis of adults, in dysenterioid enteritis, and also in the gastrointestinal troubles accompanying typhoid fever, and likewise in gastroenteritis of children. The following method of the administration was used:

About a dessertspoonful of fresh yeast dissolved in from 50 to 60 grams (two ounces) of boiled water. After the administration of a purgative this was introduced, at a temperature of 98 F., through a rectal tube, into the bowel, and caused to be retained as long as possible. The yeast was introduced three times daily. Subsequently, for convenience sake, a teaspoonful of dried yeast was used in place of the fresh preparation.

Yeast has been used in cases of glycosuria with very great amelioration in the symptoms and distinct reduction in the amount of sugar excreted. In habitual constipation very favorable results have been obtained by the use of yeast. Either fresh yeast, simply dried at a temperature of 86 F., or yeast the vitality of which has been destroyed by an hour's subjection in an oven to a temperature of 298 F., was used. The dose of the former is 7½ grains, to be taken per os twice or thrice daily; of the latter 3½ grains.

The favorable action is said to manifest itself from the second day, and to continue for some time after the cessation of the treatment.

Some flatulent distension and occasionally slight colic may occur, but these are said to be avoided, or, at least, diminished, by the use of the sterilized yeast. The results of the use of yeast in furunculosis have not always been satisfactory. Some cases of pneumonia are reported as cured. Favorable results are reported in the treatment of otitis externa furunculosa with beer yeast.

Kempf, in the *Indiana Medical Jour.*, says that yeast poultice is one of the best antiseptic applications for various septic conditions such as gangrene, ulcers, erysipelas, eczema, and as an application for infected tissues after extensive injury. The poultice is prepared by taking a quart of beer yeast and mixing it with one pint of finely sifted cornmeal. The mixture is then placed near a fire until it rises. With the dough thus formed two ounces of finely powdered charcoal is incorporated. The writer reports six cases with very excellent results.

Eczema.

Leeds, in a communication, gives the following formula, which has given good results in the treatment of this condition:

℞ Pulv. sulphuris 3iv 16
Cupri sulphatis 3ii 8
Hydrargyri oxidi rubri.....3i 4
Vaselini albi .....℥iv 120

M. Sig.: Apply every night, allowing it to remain ten minutes, then remove with warm, soft water and castile soap.

Chronic Nephritis.

Moore, in the *Clinical Review*, recommends the following, which has given him excellent results in increasing elimination and overcoming the drowsiness of impending uremic coma:

℞ Sodii benzoatis 3iv 16
Tincturæ limonis 3i 30
Aquæ dest., q. s. ad.....℥vi 180

M. Sig.: Tablespoonful in half glass of hot water on arising in the morning, or as required.

Acne Vulgaris.

Hunt, in the *Jour. of Med. and Surg.*, outlines the treatment of this condition as follows: Prolonged bathing in hot water will effect a cure in the less severe cases. The water should be soft and the applications should be made with a soft sponge. The water should be as hot as can be borne and the sponge applied to the face at least five minutes, moderate pressure being used. This bathing should be done night and morning. After sponging, the face should be dried with a soft towel and bay rum applied freely. In the more severe cases the following may be used:

℞ Saponis viridis .....℥iss 45
Alcoholis 3i 30
Spiritus odorati 3ii 8
Aquæ dest. q. s. ad.....℥vi 180

M. Sig.: Rub into the skin at bedtime and wash off in the morning. If this proves too stimulating it may be omitted for a day or two and some mild oil used on the skin. The inflamed and unsightly follicles should be opened and contents expressed.

Hygiene in Maternity.

Hanson, in an article on this subject in the *Columbus Medical Journal*, recommends that the following articles of diet should be avoided during the pregnant state: Soup made from vegetables growing under ground; salt pork, with or without beans, in any form; boiled dinners, ham, veal, duck, liver, kidneys, hash, meat-mixed salads, corned beef; any canned meats or soups, mackerel, dried fish or salt meats, except codfish; bananas, tapioca, breakfast cereals, mince pie, suet pudding, fruit cake—in fact, any kind of cake; tea or coffee, and especially if they have been boiled.

Ringworm.

The *Clinical Review* recommends the use of formalin in this affection and states that it is best given with glycerin in the following formula:

℞ Formalini .....m. v |30
Glycerini 3ii 8

M. Sig.: Apply locally.

Remove all grease from the scalp, or part affected, by turpentine, followed by soap and warm water. Then apply the above solution, and continue the application several times for about an hour, so as to allow an opportunity for the preparation to penetrate into the deeper parts of the diseased follicles.

Bronchitis.

Yeo recommends the use of antimony for this condition, and states that it should be given in small and frequent doses early in the disease, when the membrane of the bronchial tubes is dry and tumid, and the skin is hot and dry and the pulse hard. It is well to combine antimony with other diaphoretics. From 10 to 20 minims of the wine of antimony may be used for adults, and from 5 to 10 minims for children. The following combination is advised:

R.	Vini antimonii	℥ii	8
	Spiritus etheris nitrosi	℥iv	16
	Liq. ammon. acetatis	℥ii	60
	Tincturæ camphoræ comp.	℥ii	8
	Aquæ dest. q. s. ad	℥viii	240

M. Sig.: Two tablespoonfuls every three or four hours.

Bisulphid of Carbon in the Treatment of Tuberculosis.

Professor Coromilas of Athens, Greece, discussed this subject recently before the Chicago Medical Society. His results and conclusions are based on the observations made in Greece and France since 1892 of cases treated by this method. The point he especially emphasized was that the hypodermic use of this remedy exerts a favorable influence on the white corpuscles. The use of the same remedy by intratracheal instillations is also recommended. The author has treated 66 cases, including pulmonary tuberculosis, in several stages; lupus, spondylitis, anal fistula and tuberculous peritonitis. His conclusions are as follows:

1. That the bisulphid of carbon as administered by him has no disagreeable results.

2. It has a strong action against the bacillus tuberculosis.

3. Because of its parasitic antizymotic, antiseptic and inoffensive action it is capable of penetrating all tissues and in this manner cures tuberculosis.

4. It should not remain unknown, but should take its place in therapeutics as one of the specifics of our time capable of doing immense service to suffering humanity.

Diarrhea.

Scott, in the *Central States Med. Magazine*, states that the following combination has proved valuable in the treatment of acute diarrhea of adults:

R.	Benzonaphthol	gr. ii	12
	Bismuthi salicylatis	gr. v	30
	Resorcini	gr. ii	12

M. Ft. Chart No. i. Sig.: One such powder every three hours.

Tonsillitis.

The *Med. Times and Hospital Gazette* recommends the following formula:

R.	Tincturæ guaiaci ammon.		
	Tincturæ cinchonæ comp., āā	℥vi	24
	Sodii chloridi	℥ii	8
	Pulv. acaciæ		
	Aquæ dest., āā q. s. ad	℥iv	120

M. Sig.: Shake well. Add teaspoonful of mixture to wineglassful of water and use as a gargle three times daily.

Medicolegal.

Criticisms of Questions for Medical Experts.—The Court of Errors and Appeals of New Jersey says that, in the malpractice case of Shoemaker vs. Elmer, where it awarded a new trial, after judgment for the defendant, the only assignments of error of importance related to the admission in evidence, over objection, of three questions propounded to the expert medical witnesses called by the defendant. One question was: "Now, from the statement made by Dr. Elmer as to what the patient said to him as to the cause of the injury, what he said he did in discovering what the injury was, and the treatment as testified to by him, was what he did to discover the cause of the injury and his treatment in conformity with or a departure from the rules of practice of the medical profession?" Another question was: "From the statements as made by the defendant in your hearing as to the plaintiff's statement of the cause of the injury, and his (the defendant's) statement as to what he did to determine the injury and what he did in the treatment of it, was there any want of skill or bad treatment, or malpractice by the defendant?" The court thinks each of these questions inadmissible. It says that they were clearly objectionable, even under the cases relied on by the defendant to sustain them. Neither of these two questions was limited to, or solely predicated on, the statements made by the defendant in his testimony in the cause. The first question was broad enough to permit the expert to base his reply solely on facts which he might have learned from the defendant off the witness stand, or on those he might have heard him testify to in the cause at the trial, or both. The second question was also broad enough to permit the witness to base his reply either in whole or in part, at his pleasure, on facts derived from the defendant's statements made as a witness or otherwise. Neither of these questions needed further comment. There is no rule of evidence governing the admission of expert testimony which could make these questions thus framed admissible. The third question was somewhat more restricted. It was: "Doctor, from the symptoms and the particulars of the plaintiff's condition and the treatment by the defendant, as testified to by the defendant, do you see any evidence of bad treatment or malpractice, according to the rules laid down in practice by the medical faculty?" To sustain the admissibility of this question, Twombly vs. Leach, 11 Cush. (Mass.), 397, was cited. The court says that case did appear to give support to the admissibility of this question; but it does not commend itself to the court's judgment, and is clearly unsupported by authority. This question was a hypothetical one. It was asked of an expert who was expressing an opinion on facts testified to by another person. The question was so framed that it was not possible to tell which of the facts testified to by the defendant must be taken by the witness as the basis of his opinion. The question permitted the witness to determine what part of the defendant's evidence he would adopt and which reject in reaching his conclusion. It afforded the opposing party no opportunity to object to the assumptions of fact on which the opinion of the witness was asked. Expert evidence should be carefully guarded. It is sufficiently dangerous when carefully circumscribed. It becomes altogether too unreliable when the basis of it is indefinite. The question on which the opinion is expressed should be so clear that the jury will not be left in any doubt about what the actual facts are on which the witness is expressing an opinion. A question should not be so framed as to permit the witness to roam through the evidence for himself, and gather the facts as he may consider them to be proved, and then state his conclusion concerning them. An attempt was made, and the court says it was supported by some authority, to differentiate where the testimony used or the basis of the question is the testimony of but a single witness and is uncontradictory. But the court states that it is unable to see why that should be so. Whether it is contradictory, or involves a different interpretation by different minds, is always problematical. For the expert to remember all the material facts testified to by a single witness, which are to be the basis of his opinion, may be as difficult as to call to mind all the material facts testified to by several witnesses. There should be no loosening of the rule as to the admissibility of this class of evidence. It is undoubtedly very important evidence in many cases, when given strictly within the rule, and its usefulness should not be impaired by raising a doubt as to just what force such evidence should have in the cause. The jury, to estimate properly the opinion expressed, should have the means of showing exactly on what the opinion is based. This court agrees with the view that a medical witness, who has been present during the whole trial and heard all the evidence, should not be permitted to express an opinion on the evidence as heard by him, but that his testimony should nevertheless be taken on a hypothetical question, stating the facts claimed to be established and which are to form the basis of his opinion.

Excessive Sexual Demands as a Ground for Divorce.—The Supreme Court of Iowa says, in Ridley vs. Ridley, that when the plaintiff was married she was 54 years old and a widow, and the defendant was nearly 68 years of age and a widower. They lived together about two months, when the plaintiff left the defendant, and thereafter brought this suit, alleging that her life was endangered by the defendant's excessive sexual demands on her. With regard to the evidence, all that the

court says is that the plaintiff testified as to the frequency of the demands, and that the defendant did not deny her statement, nor did he claim that "age had withered his desire." Neither was there a serious question as to the effect on the plaintiff's health. It probably was true that these excesses did not directly affect her lungs, and cause the attack of pneumonia which she suffered after she left the defendant; but that they produced a weakened physical condition, which more readily yielded to that disease, may fairly be inferred. The plaintiff did not claim that she resorted to physical violence to restrain the defendant's ardor, but she protested and resisted as strongly as she could without resorting to extreme force. And the court says that to entitle a wife to maintain an action of this nature it does not apprehend that it is necessary to prove that she engaged in an angry controversy or resorted to extreme physical force every time that she declined the embrace of her husband. If such were the case, the wife's life would be doubly endangered at such times. So, while this was not an extreme case, the court thinks that the plaintiff was entitled to a divorce under the evidence, and affirms a decree in her favor.

Violation of Practice Act One Continuous Offense.—Section 4 of the Kentucky act of May 10, 1886, regulating the practice of dentistry, provides that "any person who shall, in violation of this act, practice dentistry or dental surgery in the state of Kentucky, for fee or reward, shall be subject to indictment by the grand jury of the county in which the offense is commit'ed; and, on conviction, shall be fined in the sum of not less than fifty dollars nor more than two hundred dollars for each offense." The question was raised, in Wilson vs. Commonwealth, whether or not the offense denounced by the statute is of such continuous nature as to subject the violator to only one conviction for the whole period of time next before the institution of the prosecution, or is it of such a character as that each act of practice constitutes a separate offense? The Court of Appeals of Kentucky says that it is apparent, upon very slight consideration, that if each time an unregistered dentist pulls a tooth he is subject to a fine of from $50 to $200, in a short while these would aggregate so large a sum as to make payment impossible, and, as a result the defendant might lie in jail a large part of his life. Such a conclusion is not to be reached, unless constrained by the very letter of the statute. We are not without high authority, as well as sound reason, against the cumulative construction. So the court decides against it, or that the offense denounced by the statute is of such continuous nature as to subject the violator to only one conviction for the whole period of time next before the institution of the prosecution. The first case cited on the subject is the English one of Apothecaries Co. vs. Jones, 1 Q. B. 89, where the court says that there was involved an act similar in principle to the one here under consideration. The apothecaries act of 1815 (55 Geo. III, c. 194, sec. 20) provided that "any person who shall 'act or practice as an apothecary' without a certificate is liable to a penalty 'for every such offense.'" The defendant had practiced as an apothecary without a certificate, and given medical advice and supplied medicine to three different persons at different times on the same day, and it was held that the words "act or practice as an apothecary" were directed against an habitual or continuous course of conduct, and that the defendant was not guilty of a separate offense in attending each of the three persons, and was only liable to one penalty.

Current Medical Literature.

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

American Medicine, Philadelphia.

November 12.

1 *Transudates and Exudates, with Report on 75 Fluids. Joseph L. Miller.
2 Hyperchlorhydria, with Observations on Diet and Gastric Analysis. James R. Arneill.
3 The Relations of Ophthalmology to Other Departments of Science. Edward Jackson.
4 Chronic Prostatitis. E. G. Ballenger.
5 *The Results of Treatment of Carcinoma by the Roentgen Ray. J. N. Scott.

1. **Transudates and Exudates.**—Miller presents the results of his investigations into the general characteristics of exudates and transudates, the methods of determining the tuberculous character of serous fluids, the prognostic value of the findings, the present knowledge of cytodiagnosis and his personal observations in examination of fluids obtained from 93 different patients. He concludes that the color of the fluid, its reaction, and the size of the erythrocytes are of little diagnostic value. Nucleoalbumin is usually more abundant in exudates than transudates; however, many exudates fail to show more than a faint trace. On account of the constancy of the salts present, the specific gravity and amount of albumin bear an intimate relation. Fluids from different body cavities of the same individual, or fluids of the same origin in different individuals or successive tappings of the same cavity may show marked variation in the amount of albumin, probably explained by the permeability of the capillaries, the degree of irritation of the serous surface, the condition of the patient's blood, the tension of the fluid, the amount of absorption taking place, and possibly the blood pressure. Methods of estimating the bulk albumin, as Esbach's or Purdy's, are not applicable to serous fluids. Reuss' formula is the most accurate, simple method for determining the amount of albumin in serous fluids. The diagnostic value of the specific gravity, or amount of albumin is greatly lessened by the frequent presence, simultaneously, of several processes. A hydremia, as a result of anemia or transudation from pressure may lower the specific gravity of an inflammatory fluid. Secondary inflammation, high tension of the fluid, or resorption taking place, may increase the specific gravity of a transudate. At present there is no reliable method for determining the tuberculous character of a serous fluid. The specific gravity of a fluid, when taken for successive tappings, may be of prognostic value. Epithelial cells in sheets are not infrequently present in fluids of inflammatory origin. The predominence of lymphocytes may be associated with a long-standing simple pleuritis, a hydrothorax or a tuberculous pleuritis. The presence of relatively large numbers of neutrophiles in pleuritic fluids may be associated with an acute, simple, or secondary tuberculous pleurisy. The presence of numerous cells, chiefly neutrophiles, suggests an acute simple pleuritis. The presence of numerous lymphocytes, with few, if any, neutrophiles, indicates that the process is probably a tuberculous one. In ascitic fluids there is little that is characteristic. Neutrophiles are usually more abundant in fluids due to portal stasis from cirrhosis than in tuberculous peritonitis. An eosinophilia in one body cavity may occur along with a neutrophilia in another. A study of the cellular elements in fluids from the pleural or abdominal cavities is of comparatively little diagnostic value, either in differentiating transudates from exudates, or in determining the character of the latter.

5. **Roentgen Ray in Treatment of Carcinoma.**—Scott obtains his current from two 12-inch Fessenden machines connected in series to give a 20-inch spark, and a mechanical break of his own construction, consisting of a copper disc with four fans, which revolve and make contact with a copper brush. The break is made under albolin. This gives a clean, sharp break. It is operated by a motor with a rheostat which gives three speeds of break, one 500 per minute, one 1,000, and one 2,000. He operates a machine of 110 volts direct current through a graduated rheostat in series with coil. He keeps an ampere and volt meter in circuit. To protect himself and parts of the patient not being treated, from the effects of the ray, he uses a metallic box, which he described several years ago. He begins with daily exposures if the case is serious; if not, every other day. Ordinarily the anode of the tube is placed 8 inches from the part to be treated, raying for six minutes, if exposures are daily, and eight minutes if every other day. In a given case he tries to carry out the same technic all through the treatment, regulating the number and duration of the exposures by the reaction obtained. He uses a vacuum corre-

sponding to the depth of growth being treated, employing a self-regulating tube with a small amount of metal in the anode. The cases which respond best are those of slow growth, whether the growth is primary or secondary to an operation. His best results have been obtained in the treatment of recurrent growths of the breast, next primary growths of the breast, then the uterus, stomach and intestines. He cites the following statistics: Cancer of the uterus, 14 cases; two patients well for two years, one had been operated on with recurrence, the other had not. Considerable relief was obtained, lessened hemorrhage and general temporary improvement, in 8 other cases. The remaining 4 either discontinued treatment or there was no apparent improvement. Primary carcinoma of the breast, 11 cases; 4 are well at the end of two years or longer. In 15 patients treated immediately after operation, there has been no recurrence after two years in 10. Of 38 recurrences after operation, 8 are well at the end of two years.

Medical Record, New York.

November 12.

6 *Nephrectomy for Tuberculosis of the Kidney, with a Report of Four Cases. H. N. Vineberg.
7 The Lymphoid Affections of the Upper Air Tract of Children. Walter F. Chappelle.
8 *A Clinical Observation of 116 Cases of Typhoid Fever, with Special Reference to Therapeutic Fasting. R. M. Harbin.
9 Treatment of Prolapse of the Umbilical Cord. W. Reynolds Wilson.
10 *Formol-Iodin, a Modified Claudius Method for the Preparation of Catgut. Willard J. Stone.
11 *Strophanthus in Lobar Pneumonia. C. Am Ende.

6. See abstract in THE JOURNAL, XLII, page 1583.

8. **Therapeutic Fasting in Typhoid Fever.**—Harbin says that fasting and a restricted diet are indicated in the treatment of typhoid fever because of pathologic conditions, and that such treatment will, to a great extent, eliminate the dangers of sthenic cases. In fact, the proper food management of a case will well nigh shield it from every danger incident to the course of the disease. What the patient loses in food is more than compensated by a lessened degree of toxemia. Surplus food causes accumulations in the intestine, augments the toxemia, causes diarrhea, and increases the risk of hemorrhage. There always is a greater degree of toxemia in cases complicated by severe gastrointestinal disturbances. Different individuals are affected differently by the specific toxin, robust young adults being more susceptible, while the extreme of ages and the anemic are less so. The author employs cocoa, coffee, egg albumin, peptonoids, and broths of beef, mutton, chicken, oysters, etc., in prescribed amounts, to be given only after the patient has fasted from twenty-four to forty-eight hours. Gelatin is a valuable adjuvant in the dietary of the typhoid by adding to the relish of the various liquids, lessening the nitrogenous waste and preventing hemorrhage. A teaspoonful three or four times a day, is ordered, dissolved in a little hot water, and added to any liquid nourishmeent. When used, emaciation is less rapid. It should be used as a routine in all cases to prevent hemorrhage. In very aggravated cases of diarrhea it may increase tympany, but in these cases it may be used on alternate days in small quantities. Since beginning its use, Harbin has not had a case of intestinal hemorrhage. Milk should be absolutely forbidden, except diluted with from 2 to 5 parts of coffee, cocoa, broths or hot water, because then the danger of curd formation is slight. This plan of dietetic treatment should be continued until the active symptoms are controlled. Fasting in late stages and convalescent stages will cause fever. Nearly all recrudescences are due to dietetic errors. Fasting and restricted diet greatly enhance the effect of hydrotherapy. Harbin reports 45 consecutive cases of typhoid, treated according to his method, without a death. Since using the treatment he has had a mortality of only 3.4 per cent.

10. **Formol-Iodin.**—In order to increase the tensile strength of catgut, Stone suggests the following modification of the Claudius method: Submerge the raw commercial catgut in an aqueous 4 per cent. formalin solution for from thirty-six to forty-eight hours; then wash in running water for from ten to twelve hours to free the excess of formalin, and then submerge in the iodin solution recommended by Claudius, for eight days before using. The gut should be loosely wound on glass spools and put in the formalin solution. When in the running water, strands from ten to twelve inches long are cut from the spool and put into the iodin solution. The addition of 5 per cent. boroglycerid solution or of glycerin, to the iodin solution, improves the pliability of the catgut without in any way lessening its tensile strength. The boroglycerin, or glycerin, should be sterilized in a container surrounded by boiling water for one-half hour on three sucessive days. The material is left in the iodin or iodin-glycerin solution until ready for use, when it is removed with sterile forceps, threaded and placed in sterile water. Stone says that catgut so prepared has the tensile strength of silk. It is pliable, not too elastic, knots well, and seems to be the ideal in every way.

11. **Strophanthus in Lobar Pneumonia.**—Am Ende emphasizes the value of strophanthus in the treatment of lobar pneumonia, to be given immediately on the establishment of a diagnosis; the dosage to vary according to circumstances. In his experience it has brought about a favorable termination of all cases on the fifth day. One case is cited where minim doses of strophanthus were administered every hour with full doses of aromatic spirits of ammonia, with the result that within about twenty hours the well developed symptoms of the first stage had all disappeared and the patient returned to work four days later.

Boston Medical and Surgical Journal.

November 10.

12 Tuberculosis, Its Nature and Prevention. Henry Barton Jacobs.
13 The Ideal Doctor. David W. Cheever.
14 *The Technic of Resection of the Cecum. Charles L. Scudder.
15 Plastic Operations for Resection of the Nasal Septum and Excision of Septal Spurs. A Review. George H. Powers, Jr.

14. **Resection of the Cecum.**—Every surgeon doing abdominal work, says Scudder, should be familiar with the technic of this operation. The abdomen should be opened by that incision which will render most easily accessible the parts to be operated on. An incision in the right linea semilunaris is satisfactory in most instances. The oblique incision parallel to and above the crest of ileum is also a convenient one. The parts being well exposed, an incision is made through the posterior parietal peritoneum at the outer side of the cecum and ascending colon. The colon is freed from its bed until the hand passes beyond its inner border behind the peritoneum. The branches of the ileo-colic artery are divided and ligated with fine silk by the use of a Cleveland needle. All mesenteric vessels to the cecum and to the ileum, so far as it is decided necessary to remove the ileum, are likewise ligated. This leaves the parts of the bowel to be removed entirely free. A rubber covered clamp is placed on the distal portion of the ascending colon. A clamp without rubber cover is placed near it on the ascending colon. The bowel is divided, between the clamps, sufficient space being left on the proximal end of the ascending colon to permit of the placing of a purse-string suture. The distal divided end of the colon is closed by an over-and-over continuous Pagenstecker linen suture. This suture closes the colon and checks all bleeding from the mucous membrane. The rubber covered clamp is then removed. The closed end of the colon is pushed within the purse-string suture, which is drawn taut and tied, three or four interrupted mattress sutures being then placed over the dimple formed by the puckering purse-string suture. The clamped cecum is held with gauze by an assistant, while two clamps are placed on the ileum, a rubber covered clamp being placed on the proximal portion, the clamp without the rubber cover being placed tightly on the portion to be removed. The ileum is divided obliquely so as to preserve by a good circulation the integrity of the bowel opposite to the mesenteric attachment. A point is selected on the ascending colon or transverse colon at which the divided ileum is anastomosed to the colon. After transverse division of the bowel it may be longitudinally divided opposite the mesenteric attachment, the corners thus formed being rounded off. This gives a larger opening and one less likely to be subsequently constricted. The portion of transverse colon where the

anastomosis is made is isolated by means of the rubber covered clamp, thus checking hemorrhage and occluding the bowel. The suture used is the Pagenstecker linen thread with a straight No. 6 milliner's needle. A bit of omentum is fastened as a plastic over the line of suture. The operation is done practically extraperitoneally, the abdominal cavity being protected by gauze. The parts are washed carefully with salt solution and the abdomen is closed, with the exception of one small wick to the retroperitoneal attachment of the ascending colon. If there is need for speed in finishing the operation, the Murphy button may be used to advantage.

Medical News, New York.

November 12.

16 Hepatoptosis Complicated by Gastroptosis: a Suggestion as to Treatment. Ellsworth Eliot, Jr.
17 Races and Peoples with Regard to Tuberculosis. John B. Huber.
18 *The Consumption and Elimination of Water in Dry and Moist Climates, with Special Reference to the Cause of Bright's Disease. William S. Carter.
19 Infant Feeding and Milk Modification. R. E. Van Gieson.
20 *Cicatrization—Blood Vessels in Ulcers of the Bladder. G. Kolischer.
21 Tuberculosis in Our Public Institutions. James Greenwood.
22 Colloids and Ions. Wm. R. Williams.

18. **Water and Bright's Disease.**—The observations presented in Carter's paper were undertaken with the object of determining the influence of dry and moist climates on the amount of water consumed and the amount given off as urine, and whether or not there is any relation between the prevalence of Bright's disease and the climatic conditions. A careful study of his table of comparison of mortality rates and climatic conditions of different cities shows that there is no relation between the degree of humidity or length of the warm summer season and the mortality from Bright's disease; nor does the latter bear any relation to the general mortality rate. For instance, in Denver and Boston the conditions of temperature are very similar while there is a wide difference in the humidity, but the proportion of deaths from Bright's disease is practically the same. There appears to be no doubt that Bright's disease is more prevalent in Galveston than in most cities, but it seems highly improbable that the climatic conditions have anything to do with this. Carter believes that there are two causes which seem more plausible than any of the explanations usually given: (1) the excessive use of meats in a climate in which proteids can not be so readily metabolized as in a colder climate; and (2), the failure to recognize and properly manage mild acute infections.

20. **Cicatrization.**—In four cases of ulcerations of traumatic origin which proved stubborn to the usual treatment of curetting and cauterizing, Kolischer made the rather surprising observation that disagreeable symptoms, such as irritation in the bladder region, frequency of urination and occasional tenesmus, persisted, although the urine was cleared up perfectly and repeated and careful cystoscopic examination proved with absolute certainty that the ulcers had healed and that complete epithelialization of the defects had taken place. It occurred to Kolischer that the persistence of a number of quite large blood vessels in the neighborhood of the healing ulcer might have something to do with the sensation of irritation of which the patients continued to complain even after the ulcers had healed. Therefore, he obliterated these vessels with the pointed galvanocautery of his operative cystoscope, and after the eschar was thrown off, usually within a week, the symptoms had entirely disappeared and the patients were well. The appearance of these vascular loops is similar to the cicatrization loops which appear running to the ulcers in the cornea.

New York Medical Journal.

November 12.

23 *A Case of Hodgkin's Disease. John V. Shoemaker.
24 An Incomplete Report of Two Cases of Chronic Malarial Cachexia. Lionel A. B. Street.
25 *Observations Drawn from an Experience of 11,000 Anesthesias. Alice Magaw.
26 Delirium Tremens. Thomas N. Vincent.
27 Primary Nasal Diphtheria: a Plea for Its Early Recognition and a Report of Three Cases. (Continued.) Anna S. Wilner.
28 *Observations on a Series of 10 Cases of Disability of the Shoulder Joint. Harold W. Jones and Nathaniel Allison.

23. **Hodgkin's Disease.**—Shoemaker's patient was given daily exposures to the *x*-ray for a period of ten minutes during six days. The high vacuum tube was used, the entire body being exposed. The abdomen, left side and back were alternately treated. The glands began to diminish in size at the end of a week, and at the time of death, which occurred sixteen days after the commencement of the treatment, they were only about one-third their original size. The spleen decreased gradually, and on the day of death it had receded to the costal border. Although the patient developed symptoms of toxemia during the treatment, Shoemaker believes that death may have been but the ordinary termination of the disease. However, he says that in connection with the *x*-ray treatment of these cases we must bear in mind that there may not be time enough for the procedure to produce any benefit; that there is danger of an *x*-ray burn, and finally, the danger of a rapid disintegration of the new growths with the production of toxemia.

25. **Experience in Anesthesia.**—Magaw's method for producing anesthesia is the drop method, both for chloroform and ether, but otherwise does not differ from that usually employed. The statistics given are very meager and merely show that out of 11,000 anesthesias there has never been a death, nor has artificial respiration been resorted to in six consecutive years. Her patients are all anesthetized in the operating room while they are being prepared for the operation, thus securing a more rapid surgical narcosis with the use of less anesthetic. Magan finds the method safer and more satisfactory in every way.

28. **Disability of the Shoulder Joint.**—Jones and Allison describe ten cases having a uniform symptom—complex, and notwithstanding the fact that the original diagnosis varied from paralysis to dislocation, they feel justified in placing them in the same class. In each case, the affection was ascribed to a trauma, although the injury in most cases was a very trivial one, such as reaching upward and backward to press an electric button in the street car; "bruising" the shoulder slightly; "straining" the shoulder while reaching for something, etc. The affection in each case ran a definite course and the authors believe that the lesion was probably circumarticular rather than intra-articular. In the acute stage, fixation afforded complete relief from pain, and, in the majority of instances, freedom from subsequent disability. In the chronic stage, the disability due to the fibrous ankylosis was greatly relieved by manipulation under an anesthetic. The end result depends entirely on the patient's willingness and ability to follow out the exercises which constitute the aftertreatment. About ten weeks' time is required for complete relief from the disability.

St. Louis Medical Review.

November 12.

29 *Strictures of the Male Urethra. (To be concluded.) A. Ravogli.
30 Sarcoma of the Humerus: Resection in the Continuity. Charles G. Cumston.

29. See abstract in THE JOURNAL of November 5, page 1409.

Cincinnati Lancet-Clinic.

November 12.

31 *Hospital Construction in American Cities and Towns. A. J. Ochsner.
32 *What Shall Be Done with the Criminal Insane? John Punton.

31. Ibid., October 29, page 1326.

32. Ibid., October 22, page 1250.

Medical Standard, Chicago.

November.

33 *Leprosy. David Lieberthal.
34 *A Case of Adrenal Tumor in the Lower Pole of the Left Kidney. Bayard Holmes.
35 Rectal Alimentation. Charles J. Drueck.
36 The Scientific Struggle to Cure Pulmonary Tuberculosis in the United States Since 1882. Homer M. Thomas.
37 *Report of a Case of Tetanus Treated with Antitetanic Serum; Recovery. E. B. Montgomery.
38 Autointoxication and Its Treatment. (To be continued.) Heinrich Stern.

33. **Leprosy.**—Lieberthal reports two cases of leprosy, one of the tubercular variety, the other of the maculo-anesthetic or nervous type. The first case was reported some years ago, the

clinical diagnosis being confirmed by the microscopic demonstration or lepra bacilli in the nodule. The second case is a recent one, occurring in a Chinaman 34 years of age. About ten years ago, without any preceding symptoms, he noticed a discoloration of the skin on the anterior and bilateral aspects of the lower two-thirds of the right limb. The color became lighter and simultaneously the sensibility began to diminish. Gradually the light color changed to brown, which became more decided as time went on. About two years ago he noticed a reddish flat pimple on the left forearm, just below the elbow, which gradually increased in size. In this area the sensibility gradually diminished until now no perception remains. At present, the face is covered with an eruption of lentil to bean-sized irregular spots of a dirty brown color, smooth and shiny; infiltrated and slightly raised. The trunk and upper part of the arms show a copious crop of pinkish, non-infiltrated spots of the same size as those on the face and moderately desquamating. Small red papules resembling syphilides were found on the back and elsewhere. Sensibility was wanting in all the affected parts, although the back of the chest, as well as the inner aspect of the right humerus was hyperesthetic. Nowhere did the area of anesthesia correspond to the distribution of a certain nerve. The soles of the feet and the palms of the hands showed normal perspiration, but were without secretion of sebum. Of the accessible nerves, the ulnars, as well as the crurals, were thickened and slightly hyperesthetic. There was no weakness nor atrophy of the muscles. The superficial as well as the deep reflexes were intensified. The glands above and below Poupart's ligament were enlarged. The mucous membranes of the nose, mouth and throat were perfectly normal. The blood and skin lesions were examined for bacilli without result.

34. **Adrenal Tumor.**—The case reported by Holmes manifested only the most benign symptoms and the local findings were so obscure that it was impossible to make a correct diagnosis. The abdomen was opened on the left border of the left rectus muscle. The capsule of the tumor was carefully incised and the peritoneum thus liberated was sewed to the parietal peritoneum of the laparotomy wound, thus shutting off completely the peritoneal cavity from the field of operation. The tumor and the kidney, to which it was attached, were delivered through the incision and the tumor carefully enucleated. No large blood vessels were severed, but the oozing from the cut surface of the cortex of the kidney could only be arrested by bringing the capsule on one side against the capsule on the other by three mattress stitches. The kidney was allowed to fall back into its normal position. With the exception of the development of a periappendicular abscess in an old appendicitis scar, the patient made an uneventful and rapid recovery. A microscopic examination of the tumor showed that it was a typical adrenal growth. Holmes emphasizes that this case shows the possibilities of an extraperitoneal operation even for the removal of a very large tumor, although it is possible only when the tumor has slowly grown into the tissues of the mesocolon, and the ventral or right peritoneal surface of the colon has become greatly hypertrophied or enlarged, and the blood vessels of the colon so distorted that a long incision would not, in any way, vitiate the blood supply of this large duct. The results of the operation also show, says Holmes, the necessity of taking advantage of every opportunity to completely remove a neoplasm, no matter how grave the prognosis may be at the time of operation.

37.—**Tetanus Cured by Antitetanic Serum.**—Montgomery reports a case of tetanus in a boy, aged 14, following an injury of the foot. Ten days after the receipt of the injury the patient began to develop stiffness in the muscles of the jaw, which increased gradually and extended to the other muscles of the body. Thirty-six hours afterward Montgomery administered 20 c.c. of antitetanic serum, 5 grains chloral hydrate and 10 gr. sodium bromid. Within an hour after the administration of the serum the spasms ceased and the muscular rigidity was less pronounced. A second injection of serum, given eighteen hours later, was again followed by general improvement, lasting about twelve hours, when the dose of the serum was repeated. The patient received in all 140 c.c. of serum and at the end of the second week was so far convalescent that he could be removed to his home.

Canada Lancet, Toronto.

October.

39 Presidential Address, Canadian Medical Association. Simon J. Tunstall.
40 Functional Heart Murmurs: Their Causation and Diagnosis. Robert D. Rudolf.
41 Inflammation of the Lachrymal Apparatus. G. Herbert Burnham.
42 Tuberculosis of the Female Urinary Organs. Removal of Kidney and Ureter. Ernest W. Cushing.
43 Use of the X-ray in the Diagnosis of Diseases of the Bones. E. A. Codman.
44 Medical Thoughts. James S. Sprague.

November.

45 *The Cycle Method of the Treatment of Syphilis. Noah E. Aronstam.
46 The Diagnosis of Modified Smallpox. Charles A. Hodgetts.

45. **Cycle Method of Treatment of Syphilis.**—Aronstam describes the so-called "cyclic" method as consisting of the systematic administration of mercury in variable, changeable and alternate forms, with slight intermissions, wherein tonics and eliminatives are exhibited. The advantages of the method are: 1. It never salivates the patient. 2. No untoward after-effects are discernible. 3. Gastrointestinal disturbances are obviated. 4. Consecutive mercurial dermatoses are not apt to appear. 5. Its greater efficacy, promptness and permanency. 6. It is systematic and thorough. 7. The danger of recrudescence is minimized. 8. The tardy or tertiary phenomena are held in abeyance. Metallic mercury, in the form of mercury and chalk, should be given the preference in the commencement of treatment. It can be administered in doses of from 2 to 5 grains *ter in die*, in conjunction with nux vomica and hyoscyamus to prevent griping, and some of the easily assimilable iron preparations, if anemia coexists, as follows:

℞ Hydrarg. cum creta, gr. 63.....gm. 4.18
Extr. nucis vomicæ, gr. 5.....gm. 0.30
Extr. hyoscyami, gr. 7.....gm. 0.42
Ferri lactatis, gr. 20.....gm. 1.30

M. et ft. cap. No. 21. One, *ter in die*, 2 hours after meals, and should be continued for 7 days, after which a bitter tonic in combination with belladonna and arsenic in a vehicle of wine of kola is to be exhibited for about three days.

The author makes use of the subjoined prescription:

℞ Tr. nuc. vom., dr. 1.....c.c. 4.0
Tr. quassiæ, dr. 3.....c.c. 12.0
Tr. belladonnæ,
Liq. pot. arsenitis, aa dr. 1.....c.c. 4.0
Vin. kolæ, q. s. oz. 4..... c.c. 120.0

M. Sig.: Dr. 2 before meals with water. The three days of intermission are termed the short period of repose, in contradistinction to the long period of intermission, to be delineated in detail later on.

The protoiodid of mercury is the form next to be employed. It can be given in doses of from gr. 1/8 to 1/4 t. i. d., either alone or in combination with the tartrate of iron and ammonium. The length of time of administration is one week, to be followed by the tonic mentioned above for three days. Mercuric iodid, gr. 1/12 to 1/8, t. i. d., is then exhibited in the same manner as above, with a similar period of intermission wherein tonics are used. Next, inunctions of mercurial ointment, or, what is better, mercury vasogen (which is said to be metallic mercury with a partially oxidized hydrocarbon base of neutral reaction) may be employed. The most appropriate time for its application is the hour of retiring, and it should be continued for twelve consecutive evenings on twelve separate regions of the body, beginning with the right arm and then the left arm, anterior thorax, abdomen, right thigh and inguinal space, left thigh and inguinal space, right leg, left leg, both hands, both feet, lumbar and sacral regions, and dorsal and cervical areas in the order named, two grams of the ointment being used for each inunction. A warm alkaline bath is ordered immediately on the completion of the course and a three days' tonic repose granted. Fumigation with calomel in 15-grain doses is the next form utilized. Fumigation should be ordered every alternate day for one week, followed by another short period of repose and the administration of tonics and eliminatives. The "mixed treatment" consists of the simultaneous use of the bichlorid or biniodid of mercury and sodium or potassium iodid, preferably the sodium salt. The method is the same as used in the other procedures. When the eliminative treatment is used the patient is put on sodium or potassium

iodid in ascending doses for one week, beginning with one minim of a saturated solution three times a day, and increasing by one minim each subsequent day. If the iodids are not well borne the syrup of hydriodic acid may be substituted, or the potassium iodid may be given in solution by rectum, a few drops of tincture of opium being added to allay rectal tenesmus. The iodid may also be given in conjunction with vegetable alteratives such as stillingia, rumex, lappa, sarsaparilla. This is followed by a three-days repose and tonic treatment. After this, simple or alkaline baths daily for a week are advised, especially the various sulphur spas. All treatment is then suspended and the patient permitted to enjoy a two-weeks rest, when the above method is resumed. Aronstam insists on the strictest observance of general hygiene and appropriate diet. Balneotherapy, either simple or medicated, should supplement the treatment and should be encouraged. After the elapse of the first eighteen months under the above systematic specific medication, a month's repose is granted, after which iodin, in the form of the sodium or potassium salt, is administered in ascending doses for one month; the vegetable alteratives may be used in combination with the iodid. The iodid is given in gradually increasing doses, two or three hours after meals. A period of intermission, which should not exceed one month, is then allowed. Mercury and chalk is then prescribed for ten days, followed by a bitter tonic for four days. For the next two weeks all treatment is suspended and the patient is ordered to take frequent baths, simple or medicated. The subsequent cycles are similar to the preceding, except that the form of mercury is varied to correspond with the classification of mercurial administration outlined above. Aronstam describes many a favorable and permanent outcome to this method, and very few, if any, cases of recurrence have come to his notice. He believes this method to be vastly superior to the old unsystematic and irregular régime.

Annals of Surgery, Philadelphia.

November.

47 *Bacillus Pyocyaneus Septicemia Associated with Blastomycetic Growth in a Primary Wound. Joseph R. Eastman and Thomas V. Keene.
48 *The Bridging of Nerve Defects. Charles A. Powers.
49 Total Avulsion of the Scalp. Ernest J. Mellish.
50 Traumatic Abscess of the Cerebrum: Recovery After Trephining and Drainage. Ernest F. Robinson.
51 *Fracture of the Base of the Skull. George L. Walton.
52 *Ligation of Both Common Carotid Arteries. T. Turner Thomas.
53 *Penetrating Wounds of the Chest, Perforating the Diaphragm and Involving the Abdominal Viscera. Case of Successful Spleen Suture for Traumatic Hemorrhage. Daniel H. Williams.
54 Operative Treatment of Perforating Gastric Ulcer. Report of a Third Consecutive Successful Case of Suture. A. B. Atherton.
55 *A New Operation for Intestinal Stenoses. Theodore A. McGraw.
56 Pneumococcus Peritonitis. Report of Five Cases. Frank S. Mathews.
57 *Treatment of the Stump in Appendicectomy. M. G. Seelig.
58 Appendix Vermiformis Concealed in the Postcecal Retroperitoneal Space. John C. Hancock.
59 Appendicitis: Remarks Based on an Analysis of 219 Cases Operated on at Lebanon Hospital Up to April 1, 1904. Parker Syms.
60 Double Traumatic Iliac Dislocation of the Hip. Report of a Case with Review of the Literature. James H. Lewis.
61 Fracture of the Tibial Tubercle. Martin W. Ware.
62 Abdominal Crises Caused by Meckel's Diverticulum. Report of Two Cases with Review of the Literature. Oliver C. Smith.
63 Use of the Segmented Ring in Gastric and Intestinal Anastomoses. Francis B. Harrington and Alfred H. Gould.

47. **Bacillus Pyocyaneus Septicemia.**—Eastman and Keene report a case of septicemia caused by *Bacillus pyocyaneus* following injury in a runaway accident. The clinical features were not such as would lead to a correct diagnosis, this resting entirely on the bacteriologic findings. There was every evidence of profound intoxication—a very high pulse rate, with a temperature usually subnormal. Probably the most marked feature, and certainly one of diagnostic value, was the marked nervous involvement, a complete loss of sensation in the fingers, leading to a diagnosis of traumatic hysteria. Finally, the patient could not move her left arm or leg and had great difficulty in swallowing. The finding of blastomycetes in the local ulcer at once cleared the diagnosis and explained the failure of the wound, incident to an operation performed for the relief of pressure of the musculo-spiral nerve, to heal. The authors have been unable to find any report of another similar instance of a combination of blue pus bacillus infection with blastomycetic infection. Evidently the wound became infected with blastomycetes primarily and with *Bacillus pyocyaneus* secondarily. Thorough antiseptic measures eventually proved effective in combating the infection.

48.—See abstract in THE JOURNAL of July 2, page 70.

51. **Fracture of the Base of the Skull.**—A very thorough and painstaking study of the clinical and pathologic records of 50 cases of fracture of the base of the skull lead Walton to conclude that in the majority of the cases fractures resulted from an impact received in the horizontal plane of the skull, whether on the frontal or the occipital region or on the side of the head. While certain of the basal fractures extended from the vertex, there was no suggestion of the *contre-coup* of earlier writers. The line of fracture tended to enter the fossa nearest the point of impact and to extend in the general direction in which force was applied. In traversing the base of the skull, the lines of fracture tended to follow the lines of least resistance, and in 22 of the 50 cases these lines corresponded more or less accurately to those indicated by Rawling, who claims that the sella turcica is implicated in 70 per cent. of cases; that the line of fracture is extremely liable to follow a suture, either causing its separation or cutting across it irregularly. In Walton's cases the sella turcica was implicated in 36 per cent. The petro-occipital and masto-occipital sutures furnished common lines of least resistance. Fractures extending across the base tended to run parallel to the petrous portion of the temporal bone and through the sella turcica. Certain blows on the occiput tended to cause a line of fracture extending to the jugular foramen or across the petrous bone. The portion of the petrous bone containing the auditory apparatus showed itself peculiarly liable to fracture, more often transversely than longitudinally. In 7 cases, 14 per cent., the fracture was limited to the base, after vault impact in the horizontal plane. Neither Rawling's theory of transmitted force nor the theory of bursting fracture of von Wahl and others, says Walton, suffices alone to explain these cases. The results of experiments with bodies of simpler structure would suggest that the bursting principle predominates in pure compression of the skull and the principle of transmitted force in case of blows, while both play important parts in case of falls. The orbital foramen was implicated in 21.4 per cent. of the cases of orbital fossa fracture. Inequality and immobility of pupils, or both, furnish the most frequent and unfavorable sign of fracture of the base. In the 44 cases in which the pupils were recorded they were normal in only 13. Walton believes that injury to the cerebrospinal tract in its intracranial part is a more probable cause of the Hutchinson's pupil and the other pupillary changes than inury to the third nerve or to the cortex, though no single lesion explains all cases. He also found that the reflexes may be lessened or lost in fracture of the base, as in any case of violent jarring of the brain. On the other hand, they may be increased even to spasticity, probably through direct pressure on the pyramidal tract, as by hemorrhage. It is probable, he says, that the initial result of the impact in all cases is a tendency toward lessening or loss of the reflexes. Profuse and persistent bleeding from the ear does not suggest middle meningeal hemorrhage. None was found in the case of profuse and persistent bleeding and, conversely, hemorrhage from this artery occurred eight times without, and once with only slight bleeding from the ear.

52. **Ligation of Both Common Carotids.**—Thomas reports the case of a man, aged 32, the victim of a sarcoma of the upper jaw, which was so situated that radical removal was impossible, but which caused so much distress that some relief was urgently called for. After studying the case carefully it was decided that the only justifiable operation was ligation of the common carotid artery. Because of previous difficulty in inducing general anesthesia the right common carotid was ligated under local anesthesia by the Schleich method. There were no cerebral symptoms at the moment the ligature was tied nor

subsequently. The wound healed by first intention. A slow but positive improvement followed the operation and the mass diminished perceptibly in size. Two months later, however, a recurrence of the symptoms necessitated ligation of the left common carotid, which was done under cocain anesthesia. by the following morning the patient had passed into a condition of coma; the muscles of the neck were rigid, the hands twitched and the breathing was stertorous. Death followed shortly after.

53.—See THE JOURNAL of October 8, title 52, page 1089.

55.—See abstract in THE JOURNAL of September 3, ¶64, page 697.

57. **Treatment of Stump in Appendicectomy.**—Seelig details the results of his investigations undertaken to discover if it were not possible by a combination of clinical, experimental and pathologic methods, to determine on a rational method of dealing with the appendix stump. As the result of this work he found that a simple ligature of the appendix, ablation of the organ distally to the ligature, and cauterization of the stump, is the simplest and safest method of dealing with the diseased vermiform appendix. Of course, he says, there will always be cases where the judgment and ingenuity of the operator must regulate the method of procedure. Yet, in the main, the fact holds good that in the ordinary run of both acute and interval appendicitis cases the method mentioned is the most rational. Whether the cauterization be done with the actual cautery or with pure carbolic acid makes no material difference. Seelig prefers the actual cautery because the heat exerts a bactericidal action at some distance from the point of application of the incandescent platinum, whereas the acid acts only on the surface. Moreover, by dividing the appendix with the cautery, the escape of feces and the consequent infection of the operation field is guarded against. The disinfected stump is dropped back into the peritoneal cavity. Sections of experimentally ligated appendices showed that the mucosa is not brought into contact with mucosa, as is stated by Dr. Morris, but is crowded back for fully one-eighth of an inch on both sides of the ligature, and so crowded back as to close off the lumen completely and thus prevent the germs in the appendicular lumen from attacking the so-called line of "compression anemia." Moreover, the stump is quadruply fortified, in that it is covered over by: 1, the pulpy lymphoid tissue; 2, a thick layer of the resistant submucosa; 3, a layer of muscularis; 4, a layer of serosa in addition to being shut off by the infolding of the mucosa. He has never encountered a perforation in a case where the ligature was applied about an appendix in a non-gangrenous and not too friable area. He satisfied himself by bacteriologic experiments that disinfection of the stump either with pure carbolic acid or with the actual cautery is thorough. The opportunity presenting itself, Seelig examined postmortem the cecum of two patients who had been operated on according to his method. In both instances that portion of the cecum where the longitudinal striæ meet to mark the site of the appendix was perfectly smooth and glistening, thus disproving the statement that an uncovered stump leads to the formation of adhesions which so frequently distress the patient after operation. His final plea for the simple ligation method is that it saves time, a great surgical desideratum.

Medical Fortnightly, St. Louis.

October 25.

64 Cancer of the Stomach. J. A. Day.
65 *Duty of the State in Restricting Tuberculosis. Harold N. Moyer.
66 *Observations on the Cause and Treatment of Hay Fever. W. P. Dunbar.
67 The Mucous Membrane of the Cystic Duct—Mucosa of the Ductus Cysticus. Byron Robinson.

65.—This article has appeared elsewhere. See THE JOURNAL of July 23, title 56, page 284.

66.—Ibid., October 8, ¶32, page 1088.

Bulletin of the American Academy of Medicine, Easton, Pa.

October.

68 Relations of Medicine and Dentistry. Edward C. Kirk.
69 Relations of Physicians to Dentists. John S. Marshall.
70 Synonyms in the New United States Pharmacopeia. Joseph P. Remington.

Journal of Mental Pathology, New York.

Nos. 1-2.

71 On Some Diagnostic Difficulties in a Case of Lesion of the Spinal Cord. Giovanni Biancone.
72 Two Cases of Familial Heredo-spinal Atrophy. (Friedreich's type) with One Autopsy and One Case of So-called Abortive Form of Friedreich's Disease. (To be continued.) G. Mingazzini and G. Perusini.

Southern Practitioner, Nashville, Tenn.

November.

73 Calculus in the Kidney. Lucius E. Burch.
74 Pharaoh's Curse—the Plague of Flies. C. P. McNabb.
75 The Cutaneous Manifestations of Acquired Syphilis. J. M. King.

Canadian Journal of Medicine and Surgery, Toronto.

November.

76 Address in Medicine, Canadian Medical Association. R. E. McKechnie.
77 Chest Examinations; a System of Recording Observations. J. H. Elliott.
78 The Arid Climates. J. Frank McConnell.

The Physician and Surgeon, Detroit and Ann Arbor.

October.

79 The Faucial Tonsils: Their Use and Abuse. John North.
80 *Further Studies of the Intracellular Bacterial Toxines. Victor C. Vaughan.
81 Report of Two Cases of Tumor in the Digestive Tract. John A. Wessinger.
82 Some Rectal Diseases and Their Treatment. C. G. Darling.

80.—Ibid., September 3, page 643.

Carolina Medical Journal, Charlotte, N. C.

October.

83 Abdominal Pregnancy with Retention of Fetus Nine Years—Uncontrollable Diarrhea Existing Three Years, Evidently Due to Foreign Body in Bowel. C. M. Strong.
84 A Few Words on Tuberculosis. J. F. Swann.
85 Some Remarks on the Diagnosis of Typhoid Fever. Greer Baughman.
86 Treatment of Typhoid Fever. Wm. S. Gordon.

Journal of the Missouri State Medical Association, St. Louis.

November.

87 The Management of Irreparable Crushed Extremities. C. H. Wallace.
88 La Grippe, or Influenza, and Its Treatment. R. B. Fewell.
89 Inflammation and Suppuration of the Frontal Sinuses. T. E. Potter.
90 How to Cure by a Novel Method Hopeless Cases of Deafness and Discharge from the Ear. Robert Barclay.

Texas Medical News, Austin.

October.

91 Exstrophy of the Bladder—Treatment of Successful Case—Implantation of Both Ureters in Rectum by Method of Maydl. James E. Thompson.
92 Diphtheria. W. J. Mathews.

Medical Times, New York.

November.

93 Illustrative Cases Due to Eyestrain with Explanatory Remarks Concerning Them. Ambrose L. Ranney.
94 Clinical and Other Notes Regarding Epilepsy. Thomas H. Evans.
95 Bad Nauheim and Its Treatments. J. Howe Adams.
96 Should Deaf People Marry? H. M. Hayward.
97 Marriage and the Offspring with Regard to Tuberculosis. John B. Huber.

Colorado Medicine, Denver.

October.

98 President's Address, Colorado State Medical Society. Thomas H. Hawkins.
99 The Laboratory Diagnosis of Gastric Diseases. Edward C. Hill.
100 Typhoid Fever and Its Treatment. B. F. Wooding.
101 Bone Necrosis Following Typhoid Fever. Frank Finney.

Virginia Medical Semi-Monthly, Richmond.

October 21.

102 President's Address. Medical Society of Virginia. Joseph A. Gale.
103 The Attitude of Physician and Patient to the Science and Art of Medicine. Willia S. Gordon.
104 Report on Laryngology. Charles H. Knight.
105 Headaches from Eyestrain. Clifton M. Miller.

Medical Age, Detroit.

October 25.

106 Anent Common Furuncles. Q. W. Hunter.
107 Puerperal Sepsis. Charles C. Allison.

Oklahoma Medical News-Journal, Oklahoma City.

October.

108 Use and Abuse of the Curette. T. J. Dodson.

Journal of the Mississippi State Medical Association, Vicksburg

November.

109 The Gynecologic Aspect of Cervical and Perineal Lacerations. J. W. Barksdale.
110 Hydrocephalus: Report of a Case. W. W. Robertson.
111 Diagnosis and Treatment of Placenta Previa. Geo. L. Harbour.

112 Report of Cases of Placenta Previa. I. H. C. Cook.
113 Salpingitis. W. R. McKinley.
114 Intestinal Disorders of Childhood. S. W. Glass.

Wisconsin Medical Journal, Milwaukee.

October.

115 The Moral Aspect of Abortion, Craniotomy and Extrauterine Pregnancy. T. L. Harrington.
116 Osteosarcoma of the Humerus, with Removal of the Arm, Clavicle and Scapula. Death from Sarcoma of Lung Nine Months Later. L. H. Prince.
117 Use of Drugs in Labor. J. F. Ford.
118 Regarding the Lack of Progress in Scientific Therapeutics. E. L. Boothby.
119 Diagnosis of Early Ectopic Gestation. William E. Ground.

Annals of Gynecology and Pediatry, Boston.

October.

120 Hebotomy. Th. H. Van de Velde.
121 Hysteropexy Regarded with Reference to Its Influence on Subsequent Pregnancies. M. Oui.

Southern California Practitioner, Los Angeles.

October.

122 Chorea. H. G. Brainerd.
123 Surgical Anatomy of the Inguinal Canal. Claire W. Murphy.
124 Electro-hemostasis—Skene's Method. W. R. Pryor.
125 The Physiologic Function of Menstruation and the Part Played Therein by the Fallopian Tubes. J. Riddle Goffe.
126 Prostitution. Woods Hutchinson.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

November.

1 Discussion on the Treatment of Non-suppurative Disease of the Middle Ear. Urban Pritchard, Thomas Barr and others.
2 The Disturbances of Vision and Development of Blindness of Nasal Origin Induced by Disease of the Posterior Accessory Sinuses. Professor Onodi.
3 *Discussion on the Etiology, Treatment and Prognosis of Innocent Laryngeal Growths. J. D. Grant, Albert Rosenberg and others.
4 Local Treatment of Some Forms of Non-suppurative Catarrh of the Middle Ear by Compressed Air and Nebulizer. Adolph Bronner.
5 *Meniere's Disease; a Clinical and Experimental Inquiry. Wm. Milligan.
6 Case of Congenital Word Deafness. W. S. Syme.
7 *Notes on a Case of Mastoid Abscess Five Weeks After Measles; Operation; Recovery. L. Asher Lawrence.
8 *Discussion on the Relation of Asthma to Nose Disease. Greville MacDonald, S. West and others.
9 *Two and a Half Years' Experience of the Subcutaneous Injection of Hard Paraffin for the Removal of Deformities of the Nose. J. Walker Downie.
10 Some Observations on the Mode of Origin of Nasal Polypus. Eugene S. Yonge.

3. **Innocent Laryngeal Growths.**—Grant cites 14 cases of patients affected with benign laryngeal growths to show the variability of the treatment that can be instituted tending toward a removal of the tumor. He says that only very wide rules can be laid down, inasmuch as the operator must be guided by the circumstances of the individual case and by his own experience. Although Grant is very much impressed with the value of the galvanocautery, he advocates a judicious electicism in treatment. After operation recurrence is probable unless the removal is complete. His own experience leads Grant to the view that single pediculated growths at the anterior commissure are unlikely to recur, whereas sessile ones at the junction of the anterior and middle thirds of the vocal cord are very likely to do so, as are also multiple papillomata. Treatment is not necessarily always operative. The avoidance of exciting and predisposing causes is sometimes sufficient to produce a cure in cases of very small nodules due to overuse or misuse of the voice. Coughing must be absolutely prohibited or prevented. Avoidance of smoking and smoky or dusty atmosphere, moderation of abstinence in regard to alcohol and other causes of gastrohepatic disturbance are also valuable prophylactic and therapeutic factors. The correction of errors in voice production is of vital importance. The occasional application of astringents may contribute, but the all-important factor is complete rest for the voice.

5. **Meniere's Disease.**—Milligan suggests the removal of the semicircular canals in non-suppurative conditions for the relief of vertigo. The object of the treatment is to destroy the static segments so that peripheral impulses may cease to call for vertiginous phenomena. In such cases, where the morbid process has lasted for months and sometimes for years, the terminal filaments of the auditory nerve are so disorganized and the hearing power so deranged that for practical purposes the organ as an organ of hearing may be disregarded. In accordance with this view, Milligan operated on three cases. The degree of operative shock was considerable in all three. In two of the cases healing took place and the patients recovered completely from the vertigo, although one complained of some swimming in the head and the other of tinnitus. They have been able to return to work. The hearing power has been destroyed. In the third case suppuration resulted and the patient is still under treatment. In the two cases there has been relief so far as the symptoms of vertigo and of sickness are concerned. The persistence of tinnitus in one case is suggestive either that the terminal filaments of the vestibular nerve were imperfectly destroyed, or that some lesion of the root of the auditory nerve coexisted.

7. **Mastoid Abscess Following Measles.**—In the case cited by Lawrence medical attention was sought because of the presence of a large swelling behind the left ear. There was also a very slight discharge from the ear itself. The patient had had an attack of measles five weeks previously and although the present trouble had existed for several weeks, no complaint was made of pain or other subjective symptoms. No previous disease of the ear had existed. On examination no granulations were present in the ear, and no pain was complained of on palpation over the mastoid. Wilde's method of treatment was adopted, and within a fortnight the case was well. Lawrence is unable to say what healing process could have produced this result.

8. **Asthma and Nasal Disease.**—MacDonald is of the opinion that asthma and diseases of the nose bear a clinical relationship to each other. That the removal of any obstruction whatever in the nose or nasopharynx may result in the cure of asthma, whether spasmodic or catarrhal, is well substantiated. Where there is no obstruction the treatment of an unhealthy mucous membrane will effect the same end. And finally, says MacDonald, whatever the state of the nose, free or obstructed, with a healthy or unhealthy mucous membrane, the great majority of asthmatics, be their asthma catarrhal or spasmodic or cardiac (whatever that may mean), can be cured by cauterizing the upper part of the triangular cartilage. MacDonald has put this teaching into practice and vouches for the accuracy of the statements, although again and again he has failed to benefit his patient until some one or other form of obstruction had been removed. Statistics are cited showing that he has succeeded in curing over 40 per cent. of all cases under his care.

9. **Paraffin Injections for Nasal Deformities.**—Downie describes in full the technic of this procedure and publishes photographs of six patients treated. The result in each case is a most decided improvement of the deformity and an entirely satisfactory outcome. In each case the paraffin has remained within the area into which it was injected. The discoloration and glazing of the skin disappeared after a few weeks. The paraffin is not affected by high body temperature nor exposure to great heat nor residence in a hot climate. Downie holds that the operation of the subcutaneous injection of paraffin to raise a sunken nose, if properly performed, is practically devoid of danger. Further, where the deformity is of the nature of a sinking in, and where the skin covering the sunken area is healthy, the shape of the nose can in all cases be improved, and in most the deformity can be wholly removed.

The Lancet, London.

November 5.

11 *Cancer of the Larynx. Felix Semon.
12 *Red-light Treatment of Smallpox: a Reply. Niels R. Finsen.
13 *Serum Therapeutics of Cases of Snakebite. George Lamb.
14 *A Remarkable Sequel to a Case of Gastroenterostomy. Arthur E. Barker.
15 Suture of Wound of the Heart. Edgar Somerville.
16 *Hemophilia and Its Treatment. Lachlan Grant.
17 Case of Hysteria Major: the Nemesis of "Dowieism"? J. S. Mackintosh.
18 Outbreak of Enteric Fever the Result of Infected Ice Cream. W. G. Barras.
19 *Case of Acute Inversion of the Uterus; Reduction by Taxis on the Seventh Day After Labor. E. Octavius Croft.
20 A Fatal Case of Tabetic Gastric Crisis. Leonard J. Kidd.

11.—This article appeared elsewhere. See THE JOURNAL of November 19, ¶8, p. 1578.

12. **Red Light in Smallpox.**—This paper by Finsen was written a few weeks before his death and is his comment on the report published by Ricketts and Byles in the *Lancet* of July 30, 1904, and abstracted in THE JOURNAL, August 20, ¶8, page 573. He says that the smallpox infection puts the skin in a state of great sensibility to light; if, now, the patient, during the period of the appearance and the growth of the exanthem, is protected against daylight—especially against the chemical rays—by means of red light, the exanthem will be less strong than otherwise and, as a rule, no suppuration will occur. It is impossible, of course, continues Finsen, to give any absolute rule, as there are many degrees of smallpox exanthemata. In many cases no suppuration occurs, although light is not shut out. But experience shows that if a patient is placed in red light or in darkness immediately after the first appearance of the exanthem, no suppuration, as a rule, will occur, even in unvaccinated cases or in cases with confluent exanthem. If the patient is put under treatment later the result will be more doubtful. Experience shows further that even a relatively short exposure to light, especially if the exanthem is fully developed, suffices for the production of suppuration. Therefore, two conditions are indispensable in order to obtain good results from the red light treatment: 1. An early treatment of the patient, and 2. an entire exclusion of hurtful rays of light. If patients come under the treatment before the fourth or fifth day of the disease suppuration will be avoided, but if the patient comes under treatment after the fifth day it is uncertain whether suppuration can be avoided.

13. **Serotherapy of Snakebite.**—This subject is thoroughly discussed by Lamb, and three cases of cobra bite are cited in which the serum treatment failed completely. In each instance the patient came under treatment within an hour after being bitten, a large quantity of serum was injected, and in one case vigorous local treatment was resorted to. He concludes his paper as follows:

1. Antivenomous sera are markedly if not absolutely specific, even between the venoms of species of the same genus. Hence in any case of snakebite the serum prepared with the venom of that species which has inflicted the bite must always be used.
2. The difficulties in collecting the poisons of the different species of snakes in sufficient quantity for purposes of immunization are apparently very great.
3. Up to the present the only sera which have been used practically are the one prepared by Calmette and the one prepared at this institute with pure cobra venom. Both these sera are practically specific for cobra venom.
4. As the neutralizing power of these two sera is not great and as a cobra can inject a large amount of venom the serum must be given in large quantity; as much as from 300 to 400 cubic centimeters, even when given intravenously, would be necessary in some cases. If given subcutaneously from ten to twenty times this amount would be required. It should therefore always be given intravenously.
5. Experiments on dogs and the records of cases of cobra bite in man bear out these calculations.
6. It is evident from the above considerations that it is a question as to whether the advantages to be gained by the serum treatment of cases of snakebite are at all commensurate with the cost entailed in the preparation of the sera.

14. **Sequel to Gastroenterostomy.**—The sequel in Barker's case was a most unusual one. The whole of the small intestine with the exception of the last seven inches or so, passed between the junction of the stomach and jejunum and the root of the mesocolon made two years before, over the first part of the jejunum and then down into the general cavity of the peritoneum. The whole small intestine thus passed also formed a huge volvulus, turning on its mesentery in a direction contrary to the movements of the clock. The intestine was placed in the normal position and the patient made an uninterrupted recovery.

16. **Treatment of Hemophilia.**—Grant reports a case in which all efforts at checking bleeding in a hemophiliac proved futile until he resorted to the use of extract of ovarian substance, giving 2½ grains thrice daily. The favorable result obtained prompts him to urge the further use of this substance.

19. **Inversion of the Uterus.**—The inversion in Croft's case occurred on the fifth day during straining while at stool. Attempts made on that day and on the next looking toward a reduction of the organ proved unsuccessful, even with the patient under anesthesia. On the eleventh day the patient came under Croft's care and a careful examination showed the uterus to be still completely inverted. The patient was anesthetized and placed in the left lateral position. After the usual preparations Croft grasped the inverted uterus in the hollow of the left hand, the fingers of the right hand being employed for counter pressure on the rim of the inverted cervix through the abdominal wall. Reduction was affected without much difficulty. In attempting replacement of an inverted uterus at an interval of several days, Croft says the possibility of inflammatory effusion and adhesion being present on the peritoneal aspect of the uterus and cervix, has to be borne in mind. It is also preferable to anesthetize with chloroform than with ether because the uterine muscle is more easily relaxed by chloroform.

Bulletin de l'Académie de Médecine, Paris.

Last indexed page 1585.

21 (LXVIII, No. 33.) *Rôle du trichocéphale dans l'étiologie de la fièvre typhoïde. R. Blanchard.
22 *Rhumatisme tuberculeuse ankylosant. Arthrites plastiques. Ankyloses osseuses d'origine tuberculeuse. A. Poncet.

21. **Trichocephalus in Etiology of Typhoid Fever.**—The trichocephalus which burrows into the mucosa is liable to inoculate the intestinal wall with bacteria circulating in the intestine that would be harmless under other circumstances. Guiart accepts this as a probable explanation of the reason why typhoid bacilli cause disease in certain subjects and not in others—they require the trichocephalus or other intestinal helminth to open the door for them. In a typhoid epidemic at Brest last fall he found the trichocephalus in 10 out of 12 typhoid subjects examined, and in another the worm was found at the necropsy. In the other the necropsy was not allowed. He urges that in case of a febrile enteritis of any nature, before we are positive as to its being typhoid, the first indication is to expel any worms that may be present with the bacteria, and thus prevent the constant autoinoculation of the patient. As the trichocephalus is the parasite usually involved, he advises energetic treatment with thymol without wasting time on determining the exact helminths present. In his examination of a number of healthy subjects and patients with diseases other than typhoid he found the trichocephalus in only one or two instances and very rare, while they were very numerous in 11 out of the 12 typhoid subjects.

22. **Tuberculous Ankylosing Rheumatism.**—Poncet's communications on tuberculous rheumatism have been summarized in these columns from time to time. He here draws the picture of the form of tuberculous rheumatism which appears as a plastic arthritis without effusion, entailing almost inevitably bony ankylosis of the affected joint or joints. Rhizomelic spondylitis, that is, the Strümpell-Marie, and the Bechterew types, generally belong in this group. It is distinguished by its inflammatory lesions, and the absence of the so-called tuberculous products, distinct from granulations, fungous formations, caseous infiltration, white tumors, tuberculous osteoarthritis and from chronic, deforming tuberculous rheumatism. It is evidently due to a toxemia of bacillary origin, like the other forms of tuberculous rheumatism. The prognosis is grave from the functional point of view, and it constitutes a terrible infirmity when the entire skeleton is involved and becomes rigid. In every event it is always a sign of an affection which may become more virulent and more serious as the viscera become affected. Tuberculosis should be thought of whenever one is confronted with a plastic ankylosing polyarthritis, especially in the absence of any other infection. This inflammatory tuberculosis may affect all the tissues, all the organs, all the various systems. The resulting lesions may range from transient congestion to acute or chronic lesions and final sclerosis.

Semaine Médicale, Paris.

23 (XXIV, No. 43.) *Report of Seventh French Congress of Internal Medicine, Paris, October 24-27. (Continued.)
24 Report of Seventeenth French Congress of Surgery. (Commenced in No. 42.) See page 1493.

23. **Arterial Tension in Disease.**—Bose and Vedel in their

address stated that the lesions in the syndromes with hypertension pass through three phases, first, a spasmodic, functional stage. It may last long and is accompanied by purely histologic, perivascular inflammatory processes. This is the pre-sclerous or pre-fibrous stage. The second phase is that of a diffuse fibrosis affecting the small vessels and determining a progressive meiopragia of the organs. This is the stage of libro-capillarity noted in careful clinical examination and at necropsies. The final phase is that of extension of the fibrosis to the larger vessels, that is, generalized arteriosclerosis with the development sooner or later of atheroma. Suppression of the primary cause, mechanical, reflex or toxic, may lead to complete recovery. When the cause can not be removed at once or the organism is saturated with it, organ therapy exerts an unquestionable antitoxic action. In acute and subacute infectious diseases, treatment should be continued after apparent recovery, to prevent or cure the sclerosis-generating hypertension. Medication should be even more energetic in diseases like scarlet fever, which induce high hypertension and are sclerogenic from the start. The diet is very important in treatment of hypertension. Table excesses should be avoided and all causes liable to increase or aggravate the development of sclerosis. As a rule, an exclusive milk diet—indicated in extreme hypertension with serious lesions in kidneys or heart—is well tolerated on condition that it is alternated with vegetables or unsalted meat. Constipation should be combated by repeated laxatives. Besides these measures, saline purgatives, diaphoretics and diuretics aid elimination. When sclerosis of the small vessels is superadded to the spasmodic phenomena, emotions, exertions, etc., liable to cause increased pressure in the fragile vessels, should be avoided. Drastic purgatives should also be administered prudently, the subject lying down for two or three hours after taking them, to prevent reflex action from the stomach or syncope from cerebral anemia. In permanent hypertension the above measures are only palliative. The sclerous lesions must be directly attacked with small doses of sodium iodid, not more than .1 to .5 gm. in the twenty-four hours, with periods of rest during which alkalines, intestinal disinfectants and sodium sulphate should be given to aid in the elimination of the iodid. When the process is still farther advanced these measures are still useful to prevent the spread of the sclerous process, but the main point is to bear in mind the fragility of the arterioles and refrain from everything that might rupture them. Hypertension is indicated when the sphygmomanometer at the radial marks above 18 cm. mercury in an adult and 20 to 21 cm. in an elderly subject. Twelve to 13 cm. indicate hypotension, 10 to 11 pronounced, 8 to 9 great, and 6 to 7 extreme hypotension. In grippe the hypotension is proportional to the severity of the infection; convalescence is longer as the period of great hypotension persists after the temperature has returned to normal. Hot and cold baths help in restoring the hypotension to normal in infectious diseases. The remedy *par excellence*, however, is profuse saline infusion. The action of adrenalin is extremely transient. Vaquez remarks that when rest and appropriate diet are unable to reduce hypertension the subject is in grave danger. The iodids act on the organic lesion, but the nitrites have a direct effect in reducing arterial pressure. Inhalation of amyl nitrite after reducing the pressure temporarily, raises it again, so that the symptoms recur, sometimes with increased intensity. It should be used only in small doses, with brief inhalations. When the hypertension is so high that it becomes menacing, lumbar puncture will sometimes relieve. He found it successful in 3 cases of uremia with brain symptoms. In a sudden crisis of hypertension, such as accompanies acute pulmonary edema, he injects .01 gm. of morphin. Teissier has observed that whenever he detected hypertension in young subjects he always found that the parents had had Bright's disease or diabetes. He calls attention to the need for discrimination, as the figure which would mean hypotension in health or in certain diseases may indicate hypertension in certain other conditions. The hypotension may be an aid in differentiating tuberculosis, etc. In typhoid fever, increasing tension may warn of impending hemorrhage. Moutier reports 18 out of 50 cases of permanent hypertension cured by arsonvalization. Verstraeten has noticed that arteriosclerosis is always most marked in the arm most used, the right arm in normal subjects and the left in left-handed. Bernheim states that when the pulse is counted aloud, if the counting is done a little faster or slower than the actual pulse-beat, the pulse will become accelerated or retarded to correspond. This effect of suggestion ceases with the test in normal subjects, while it does not commence quite so quickly and lasts a few minutes longer in subjects with hypertension.

Archiv f. klinische Chirurgie, Berlin.

Last indexed page 1586.

25 (LXXIV, No. 3.) Kriegs-chirurgische Erfahrungen aus der Zeit der nord-chinesischen Wirren 1900 (army surgery). Haga.
26 Zur unblutigen Therapie der Luxatio coxæ congenita. Braun.
27 Ueber die von den Gallenwegen ausgehenden Peritonitiden (originating in billary passages). Ehrhardt.
28 Zur Epityphlitisfrage. Ein Beitrag zur Pathologie und chirurgischen Behandlung der Epityphlitis und ihrer Folgezustände. v. Büngner.
29 *Ueber das Ulcus der kleinen Curvatur der vorderen und der hinteren Magenwand (gastric ulcer). Riedel.

29. Ulcer of Anterior and Posterior Stomach Wall.—Riedel emphasizes the necessity for an exact diagnosis of the site of the ulcer as influencing treatment. In 2 of his cases the pains were on the left side and an ulcer was found with a tumor. In 2 other cases, where the pains were on the right, there was an ulcer but no tumor formation. He describes his technic for operating in case of ulcer of the lesser curvature.

Berliner klinische Wochenschrift.

30 (XLI, No. 42.) Spreading of Female Genital Tuberculosis.—Experimente über die Ausbreitung der weiblichen Genitaltuberculose im Körper. P. Baumgarten.
31 Disease and Industrial Poisoning.—Krankheit und Vergiftung. L. Lewin.
32 *Mechanical Compression of Thorax in Treatment of Dyspnea.—Ergebnisse rhythmischer maschineller Thorax-Compression bei der Behandlung der Dyspnoe von Lungen und Herzkranken im Rettungswesen und bei Stoffwechselstörungen. D. Boghean.
33 (No. 43.) Fall von Crampus-Neurose. C. Wernicke.
34 *Ueber immunisirungs-Versuche gegen Tuberculose. P. Baumgarten.
35 *Successful Treatment of Phthisis and Other Severe Infectious Diseases with a New Disinfectant.—Ueber eine erfolgreiche Behandlung der Schwindsucht und anderer schwerer Infections-Krankheiten durch ein inneres Desinfectionsmittel. K. Küster.
36 X-rays in Med'colegal Matters.—Bedeutung der Röntgenstrahlen für den ärztlichen Sachverständigen. Immelmann.

32. Rhythmical Compression of the Thorax in Treatment of Dyspnea, Etc.—Boghean gives two illustrations of an apparatus which compresses the thorax in a manner to imitate its natural excursions, producing or deepening them as the case may be. The apparatus is adjustable and works under perfect control with an electromotor. Two pads fit tight to the surface of the chest, and rise and fall with the chest wall, but during expiration they press in deeper than the walls of the chest naturally recede. As this pressure is relieved, the lungs aspirate larger quantities of air during the next inspiration. This means of artificial respiration or correction of dyspnea is urgently indicated in every case of acute or chronic retention of CO_2. The pads exert a radial, vertebral compression, and are applied below the lower margin of the pectoral muscle to the costal arch between the parasternal and the anterior axillary line.

34. Immunization Against Tuberculosis.—Baumgarten has been experimenting for twenty years in the attempt to render rabbits immune to tuberculosis. He found them always less susceptible to human than to bovine infection, but all his attempts to immunize them with the former against the latter resulted negatively. When von Behring showed that similar procedures were successful on cattle he instituted control experiments which all have corroborated the fact. The immunity thus conferred on his cattle has persisted for two and a half years unmodified. The negative results with rabbits must be due to the greater susceptibility of rabbits to bovine infection. A single subcutaneous inoculation of the cow with human tubercle bacilli is all that is necessary to realize this immunity. Koch, von Behring and others have always supposed that repeated and intravenous injections were necessary.

but this is not the case—a single subcutaneous inoculation answers the purpose. The process induced by subcutaneous inoculation of the cattle with human tubercle bacilli extremely virulent for guinea-pigs, is not a tuberculosis, as the bacilli do not proliferate, but succumb sooner or later. The sore does not exhibit the characteristic aspect of a tuberculous process, but merely evidences of inflammation such as follow irritation from any non-specific foreign body, dead tubercle bacilli, for example. The immunization against perlsucht which follows is not due to a tuberculosis in an attenuated form, any more than the vaccine pustule is an attenuated form of smallpox. Although it may not be possible to produce an effectual curative serum against tuberculosis, yet we have strong grounds for hoping that man can be protected against the disease in the same way as cattle against bovine tuberculosis, by vaccinating human subjects with bovine tubercle bacilli. But before this can be realized in practice, the objections against the non-identity of human and bovine bacilli and their reciprocal harmlessness must be all encountered and refuted.

35. **Triumph of an Internal Disinfectant in Phthisis and Other Severe Infectious Diseases.**—Dr. Konrad Küster is "privy councilor of the public health" (Geh. Sanitätsrath) at Berlin. In this article he does not hesitate to proclaim that a remedy has been found which promptly and energetically destroys bacilli while, even taken internally in large doses, it has no injurious action on the human organism. The remedy in question is a meta-iodo-ortho-oxy-chinolin-ana-sulphonic acid combination manufactured by the German chemists under the name of loretin and offered as a substitute for iodoform. Physicians were weary of new drugs and paid little attention to the announcements of Professor Claus of Freiburg in regard to the surprising bactericidal powers of the proposed substitute for iodoform. A Freiburg layman, however, saw some of these notices and tested the drug on himself, taking as much as 75 grains at a time without ill results. He gave it to advanced consumptives, and after a few months their friends were amazed at the improvement. The results in scarlet fever and diphtheria were equally striking and the layman published a pamphlet on the subject, which attracted no attention. He then presented his data to medical circles, where he finally obtained a hearing. Küster was one of those who have been testing the drug extensively, and he waxes enthusiastic over its efficacy in infectious diseases, even the severest. The drug is eliminated apparently unmodified by the intestines, kidneys, lungs and mucosæ, thus following the bacilli into their favorite haunts. He is thoroughly convinced that in "griserin"—as the drug has been renamed—a remedy has been found which will place internal medicine—hitherto the Cinderella—on a par with triumphant surgery. He adds: "It will then be more of a joy than ever to be a physician, as we can be certain to cure the severest illnesses by careful individualizing use of this remedy. This will cut the ground away from under the feet of charlatans who flourish mainly on account of the limitations of our art in the past." The Birkenweder sanatorium has set aside an entire department, in charge of Küster, for patients taking the new remedy. He describes his experiences with it in detail, all bacterial affections apparently going down like card houses before it. The favorable results in cancerous affections suggest a bacterial origin. Diabetes alone, and possibly articular rheumatism, proved rebellious.

Deutsche medicinische Wochenschrift, Berlin and Leipsic.

37 (XXX, No. 43.) Ueber die dukessche "Vierte Krankheit" ("Fourth Disease"). J. V. Bokay.
38 Importance of Vein Valves and Their Relation to Varices.—Die Bedeutung der Venenklappen und ihre Beziehungen zu den Varicen. G. Ledderhose.
39 Abriss-Fraktur der Tuberositas tibiæ. G. A. Wollenberg.
40 *Zur Behandlung der die Gravidität und Geburt komplizierenden Tumoren speziell der cystischen Ovarial-Tumoren. A. Dührssen. (Commenced in No. 42.)
41 Acute Retention of Urine Early Symptom of Tabes.—Akute hochgradige Harnverhaltung bei einer Schwangeren als tabisches Frühsymptom. R. Birnbaum.
42 *Zur Kasuistik der spontanen und artificiellen Haut-Gangrän auf nervöser Grundlage. C. Hollstein.
43 Ueber das Epithelioma contagiosum von Taube und Huhn. M. Juliusberg.
44 *Einige Bemerkungen über die Anwendung des Yohimbin Spiegel. E. Toff.
45 Progress in Care of Sick.—Fortschritte der Krankenpflegetechnik. P. Jacobsohn.
46 Woman as an Alienist.—Die Frau als Irrenärztin. H. Stelzner.

40. **Treatment of Tumors Complicating Delivery.**—Dührssen concludes his study of this subject with the following rules: In case of incarcerated ovarian or parovarian tumors no attempt at reduction should be made during pregnancy or parturition on account of the danger of tearing the pedicle with consecutive internal hemorrhage. Treatment should be restricted to vaginal ovariotomy, usually by posterior colpocleiotomy. If this proves impracticable, laparotomy should be done in case all preparations have been made for this eventuality. Ventral ovariotomy should be preferred to the vaginal during parturition only when there is infection of the tumor content or of the genital tract. Tumors which can be pushed down into the anterior or posterior vaginal vault during a pregnancy should be attacked also by the vaginal route. High tumors which can not thus be pushed down should be left undisturbed during the pregnancy in case they do not increase in size and the general health remains good. This expectant treatment allows the tumors to be removed later by the vaginal route after delivery and complete retrogression of the uterus. In case of a myoma obstructing the pelvic outlet, which can not be drawn up out of the way, the growth should be removed through the vagina, with vaginal cesarean section, after which the uterus can be carefully emptied and ablated likewise through the vagina. If it is desired to retain the uterus, all the myomas can be enucleated through the incisions already made, and the points of attachment sutured.

42. **Artificial Gangrene of the Skin.**—Hollstein adds another to the long list of patients who induce artificial gangrene of the skin, probably for the purpose of posing as an interesting case. Differentiation is generally difficult. The necrosis was located more superficially than is liable to be the case with true gangrene, and it was surrounded by an area of inflammation. Examination of the scab may possibly reveal the presence of some chemical. Application of a tight bandage will sometimes reveal the deception.

44. **Experiences with Yohimbin.**—Toff relates half a dozen cases in which impotency was cured or the menses regulated by systematic use of yohimbin.

Therapeutische Monatshefte, Liebreich's, Berlin.

Last indexed page 1569.

47 (XVIII, No. 3.) Is Syphilis or the Tendency Plus Some Social Factor Responsible for Origin of Tabes?—Ist für die Entstehung der Tabes die Syphilis oder die Anlage und ein socialer Factor massgebend?
48 Ueber Immunisierung gegen Tuberculose. F. F. Friedmann.
49 Möller's Immunization Against Tuberculosis.—Ueber die Möller'schen Immunisierungsversuche gegen Tuberculose. O. Liebreich. See XLII, pages 623 and 985.
50 Action of Brine Baths.—Studien über die Wirkungen der Moorbäder. A. Loebel.
51 Treatment of Febrile Diseases.—Zur Behandlung fieberhafter Krankheiten. E. Homberger.
52 Wholesome Modes of Conserving Food Materials a Protection Against Intoxication.—Ueber gesundheitsgemässe Aufbewahrung der Nahrungsmittel als Schutz gegen Vergiftungsgefahren. W. N. Clemm.
53 Substitute for Cod Liver Oil: Fucol.—Fucol ein vollwertiger Ersatz des Lebertrans. J. Loewenheim.

Münchener medicinische Wochenschrift.

54 (LI, No. 40.) *Vorläufiges Ergebnis der Roentgen-Behandlung 2 Leukemiker. Fried (Erlangen).
55 Ueber mechanische Sterilisation der Gummihandschuhe (rubber gloves). Fromme and J. Gawronsky.
56 *Heart and Stomach Neuroses.—Herz- und Magenneurosen. Schoen.
57 Zur Symptomatologie und Therapie der Schein-Reduktion inkarzerierter Leistenbrüche (sham reduction of incarcerated hernia). L. Kirchmayr.
58 Nail Changes After Scarlet Fever and Measles.—Nägelveränderungen nach Scharlach und Masern. E. Feer.
59 Beziehungen zwischen Haemometer-Zahl (Fleischl) und Ferrometer Zahl (Jolles). W. Altmann.
60 Einige Fälle von Bauch-Kontusionen ohne Darm-Verletzung (contusion of abdomen without injury of intestines). A. Schmitt.
61 Zur Kenntnis der Gynaekomastie. G. Sommer.
62 Alternating Current for Medical Use.—Frage des Wechselstrombetriebes bei ärztlichen Anlagen (insb. Roentgenanlagen). F. Dessauer.
63 Universal-Apparat für operative Asepsis als trocken sterilisierender Dampf-Desinfektor. A. Watorek (Lemberg).
64 Zur Deinfektions Frage bei der Ankylostomiasis. Tenholt.
65 Influence of German Physicians Who Have Made Their Homes in America.—Der Einfluss deutschen Aerztetums in Amerika. C. Beck.

66 (No. 41.) *Spinal Anesthesia for Parturients.—Die Rückenmarks-Anathesie bei Gebärenden. A. Martin.
67 Ueber die molekulare Concentration pathologischer Flüssigkeitsansammlungen im Körper und die Einwirkung von Mikroorganismen auf die Molekulare Concentration des Nährsubstrates (organic fluids). W. Zangemeister.
68 Ueber Blutungen aus der Magendarmwunde bei Gastroenterostomien (hemorrhage). G. Doberauer.
69 Die Behandlung der Hernien mit Alkohol-Injektionen. Brodnitz.
70 Fall von Atemstillstand bei Tabes (arrested respiration). A. Loeb.
71 Ueber Netz-Echinokokkus (in omentum). K. Gaugele.
72 Zur Kasuistik der im Bereiche der Gelenke vorkommenden Fettgeschwülste (lipomas in joints). Luxembourg.
73 Zur Serodiagnostik des Typhus abdominalis mittelst des Fickerschen Diagnostikums. J. Blum.
74 Self holding Speculum.—Ein neues sich selbst haltendes Spekulum zur Anwendung in der kleinen Gynäkologie. M. Henkel.
75 Zur Technik der Vibrations-Massage. H. Haenel.
76 The Mentally Deficient from Penal Standpoint.—Die strafrechtliche Behandlung der geistig Minderwertigen. A. Cramer. (Commenced in No. 40.)

54. Roentgen Treatment of Leukemia.—Fried reports 2 cases very much improved under Roentgen treatment. The patients were men, 59 and 46 years of age, and the benefits were strikingly apparent. The leucocytes returned nearly to the normal figure, the reds increased and likewise the proportion of hemoglobin, while the spleen subsided in size.

56. Heart and Stomach Neuroses.—Schoen some time ago announced that every case of unilateral headache which he has ever encountered was accompanied by some eye defect, and was permanently cured by correction of the latter. He now reports a number of cases of chronic stomach or heart trouble which were likewise accompanied or rather preceded by an eye trouble, and were permanently cured by its correction. The eye trouble in all these cases was upward squint. These heart and stomach neuroses differ from the migraine in the respect that they occur only with upward squint, while the migraine is liable to accompany astigmatism and hypermyopia. He has had more than a hundred patients with these rebellious heart and stomach neuroses cured by correction of the upward strabismus. Such subjects are peculiarly liable to suffer from seasickness and nausea in swinging. The symptoms implicate the vagus, especially the cases with retarded pulse, hyperacidity and exaggerated salivary secretion. The subject has to make demands on a special innervation to combine the pictures seen with the two eyes and thus compensate the defect during his waking hours. This task becomes more and more laborious in time, and the fatigue experienced spreads to adjacent nerves. The overexertion of the innervation for accommodation induces headache, but the overexertion of the innervation of the elevator and its antagonist is transmitted to the vagus. The pulse returns to normal and the hyperacidity vanishes at one stroke after the correction, with the precision of a physiologic or physical experiment. The patients usually came to him after having passed from one physician to another. The diagnosis in the stomach cases had been chronic catarrh of the stomach, dilatation, hyperesthesia, nervous dyspepsia, nervous gastric troubles and even round ulcer (but without hemorrhages). One doctor diagnosed one of the above and the next, another affection, until all united in accepting a purely nervous origin for the trouble. The same is true of the heart symptoms. When asthenopic disturbances were noted they were unhesitatingly attributed to neurasthenia or the stomach trouble, when in reality the reverse was true—the entire symptom-complex was the result of the eye defect, and vanished on its correction.

66. Spinal Anesthesia During Delivery.—Martin has used the Bier-Donitz mode of spinal anesthesia in 30 cases of delivery in healthy women. The anesthesia was perfect in every case with one exception in which it was restricted to the vulva and vagina. The anesthesia generally lasted an hour or an hour and a half. If the delivery occurred during this period the absence of any pain during the entire process was most remarkable. The expulsion of the child seemed to proceed more slowly than under other conditions. The puerperal retrogression of the uterus and development of the milk secretion did not seem to be affected in any way.

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77 (LIV, Nos. 1-2.) *Ueber lymph-adenoide und aplastische Veränderungen des Knochenmarkes (bone marrow). S. Senator.
78 Ueber den Stoffzerfall bei Hyperthermien mit besonderer Berücksichtigung des Glykogens. H. Senator and P. F. Richter.
79 *Ueber die Beziehungen der Thymus zum Kalkstoffwechsel (lime metabolism). F. Sinnhuber.
80 Fall von multiplem Myelom (sogen. Kahlerscher Krankeit). Scheele and Herxheimer.
81 *Action of Heat Stimuli on Heart and Respiration.—Ueber die Einwirkung thermischer Hautreize auf die Herzarbeit und auf die Atmung. F. Winkler.
82 *Die Frage der Cytodiagnose. O. Niedner and G. L. Mamlock.
83 Ueber akute mykotische Endarteritis der Aorta und Pulmonal-Arterie mit consekutiver Bildung eines mykotischen Aneurysmas zwischen beiden Gefässen. C. Hodlmöser.
84 Zur Mechanik der Expektoration. E. Aron.
85 *Serum Treatment of Anemia.—Ueber einen Versuch mit Hilfe des Blutserums eines Anamischen einen therapeutisch verwendbaren spezifischen Antikörper herzustellen. C. S. Engel.

77. Aplastic and Lymphadenoid Changes in Marrow.—There may be numerical decrease of the elements of the bone marrow in severe anemia without the typical megaloblastic character of pernicious anemia, and also in the so-called Barlow's disease. As the latter may be incurable in certain circumstances, it stands in the same relation to the former as helminth anemia to the pernicious form. The aplasia may be primary or secondary to bone affections, and may develop directly or by intermediation of lymphatic metaplasia. It is possible that rachitic bone affections may induce a tendency to aplasia of the bone marrow. Senator makes the above statements in connection with a case presenting the clinical picture of pernicious anemia, but the blood was entirely free from megaloblasts, megalocytes and normoblasts, while there was extreme lymphocytosis and pronounced lymphatic metaplasia of the bone marrow. Lymphatic metaplasia may be encountered in leukemia, especially in the lymphatic form, also in medullary pseudo-leukemia—the aleukemic stage preceding lymphatic leukemia—and thirdly, in the mixed forms of leukemia, in pernicious anemia and leukanemia, associated in all of these with other metaplastic changes, proliferation of myelocytes, giant cells and megaloblasts. The lymphatic metaplasia may induce proliferation or diminution of the bone tissue, and both may entail aplasia of the marrow. It may likewise follow a bone affection.

79. The Thymus and Lime Metabolism.—Sinnhuber's research has established that there is no connection between the thymus and the elimination of lime. Also that there is no direct connection between the thymus and rachitis—both are probably due to some primal cause. Energetic thyroid treatment, on the other hand, has marked influence on the output of lime, raising it much above the intake.

81. Action of Heat Stimulation on Heart and Respiration.—Winkler has been studying the effect of hot water poured on the abdomen of dogs. The stimulation from the heat induced irregularities in the heart action and sometimes affected it quite injuriously. Alternating hot and cold procedures had the same effect. He is convinced that the results observed are a warning to refrain from hot-water procedures, including the Scottish douche, in all cases in which there is a liability to stagnation in the minor circulation and increased pressure in the left auricle. This would exclude from such hydrotherapeutic procedures all valvular affections, coronary sclerosis and cardial asthma, also a tendency to hemorrhage or hemoptysis, aneurisms and general atheromatosis. In chlorosis also hot baths have frequently an unfavorable action. The nervous heart troubles in drinkers and smokers are also liable to be augmented by the application of heat. In the treatment of sciatica and emphysema the Scottish douche should not be used for subjects whose hearts are not intact.

82. Cytodiagnosis.—This communication from the first medical clinic at Berlin is based on extensive clinical experience and experimental research, and can be summarized in the statement that lymphocytosis in the cerebrospinal fluid is an evidence of prolonged and powerful irritation. It is frequently encountered in lues, while it is far from constant in tabes, but oc-

curs somewhat more regularly in paralysis. It may possibly serve for the recognition of a dubious early stage of syphilis.

85. **Serum Treatment of Anemia.**—Engel drew 8 to 10 c.c. of blood from a young woman who presented typical chlorosis with extreme anemia. He injected a rabbit with the serum from the blood—after heating the serum to 58 C. to destroy the natural complements. This was repeated ten times, and serum from the rabbit was injected into the patient at 8 different times. A chill sometimes followed the injections, with more or less temperature, and the arm swelled more than the other arm, which was injected with serum from a normal rabbit. No iron or arsenic were given during this course of treatment, which was pursued during three months. Both objectively and subjectively the patient made fine progress. By the end of the year the hemoglobin was 90 per cent., the reds numbered 4,800,000, and the specific gravity of the blood was 1,058.

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86 (XX, No. 31.) Contributo alla teoria della immunitá. S. Cappelani.
87 (No. 32.) *Alterazioni strutturali nella tiroide per fosforo e per arsenico in rapporto alle cure mediche del gozzo (of goiter). L. Macaggi (Genca).
88 *La tifoemia. G. Memmi (Siena). (Commenced in No. 31.)
89 *Aneurism of Superior Mesenteric Artery. G. Baccelli. Abstract.
90 *Sul crepito xifoideo di Galvagni. Campani. Abstract.
91 (No. 33.) Contributo alla patologia del diabete mellito a forma grave. E. Tedeschi.
92 *Su di alcuni sintomi e sulla formula leucocitaria dell' avvelenamento acuto dei funghi (mushroom poisoning). U. Gabbi.
93 La pileflebite suppurativa complicante l'appendicite. Studio clinico ed anatomo-patologico. A. Pellegrini. (Commenced in No. 32.)
94 *Espirazione sistolica intercisa o soffio del cavo orale (mouth souffle). E. Galvagni (Modena).
95 (No. 34.) Sindrome leucoanemica in un malarico. A. Zeri (Baccelli's clinic, Rome).
96 Contributo all' anatomia patologica del pancreas. G. Ghedini.
97 *Action of X Rays on Leucocyte-forming Organs. C. Bozzolo. Abstract.
98 Four Cases of Traumatic Neurosis. G. Verga. Abstract.
99 (No. 35.) *Il "triangolo paravertebrale opposto" di Grocco nei versamenti pleurici unilaterali liberi. L. Ferrannini.
100 *Dell anchilostomiasi e della sua cura. G. Norsa (Perugia).
101 Sigmoidite da oxyuris vermicularis. P. F. Arullani.
102 *Sulla corizza acuta in bambini. Massei. Abstract.
103 (No. 36.) *Sull'a inoculabilitá dei tumori maligno. F. Sanfelice (Messina).
104 *Le funzioni sensitive e psichiche negli emiplegici. F. Marimo. Abstract.
105 (No. 38.) *La determinazione del sesso tentata con le citolisine. P. Zanotti.
106 *L'infezione tubercolare per la via vaginale. Ricerche sperimentali. C. Galbo. (Commenced in No. 37.)
107 *Sul valore diagnostico delle pleuriti emorragiche. N. Morano.

87. **Effect of Phosphorus and Arsenic on the Thyroid Gland.**—Macaggi's experimental research and clinical experiences demonstrated unmistakable structural changes in the thyroid under the influence of phosphorus and arsenic. In acute intoxication with either of these drugs there was a slight increase in the gland and passage of colloid into the lymphatics and a change in the composition of the colloid itself, but in the subacute and chronic forms of intoxication the colloid secretion was reduced and the secreting epithelium became atrophied. This latter fact justifies the therapeutic use of arsenic and phosphorus in case of hypertrophy of the gland.

88. **Typhoemia.**—Memmi reviews the findings in 30 cases of typhoid in which the blood was examined for the bacilli. As a rule, the presence of the bacilli in the blood coincided with the severity of the disease. The most favorable time for finding the bacilli in the blood is from the end of the first week to the beginning of the third, although in the severer cases they may be found much later and in the relapses. The bacilli cultivated from the blood were always feebly motile and sometimes bunched in groups. The Castellani technic of copious dilution of the blood with bouillon will sometimes enable the bacilli to be detected when they escape with other technics. Typhoid bacilli isolated from the blood have a weak agglutinating power, which becomes stronger as they adapt themselves to saprophytic existence. The Widal test with laboratory bacilli and with typhoid bacilli from the blood of the patient harmonize, although the latter do not permit generally of such dilutions as the former. The streptococcus and a diplococcus may sometimes be cultivated from typhoid blood in association with the typhoid bacilli, especially in case of complicating pneumonia. The cases of typhoid without intestinal localization are not so rare as hitherto supposed. In one of his patients typhoid bacilli and streptococci were found in the blood and yet there was no localization of the process in the intestines. The patient died about the sixth week, having presented the roseolæ, diarrhea, albuminuria, enlarged spleen, delirium and heart symptoms typical of typhoid and a suppurating process in both wrists. The intestines showed no lesions, merely a slight catarrhal condition. The blood serum agglutinated the typhoid bacilli from the blood at 1/15 as also laboratory bacilli. At the second examination, the thirty-first day, nothing but streptococci were found in the blood, but at the necropsy both streptococci and typhoid bacilli were found. The article reviews the literature on the subject of the invasion of the blood by the typhoid bacillus.

89. **Aneurism of the Superior Mesenteric Artery.**—Baccelli describes the case of a man of 34 with a pulsating tumor in the abdomen. The tumor was oval and was located low down behind the stomach, about 10 cm. in its longest diameter, lying across the abdomen. Both pulsation and souffle became indistinct when the stomach was distended. The location of the aneurism did not correspond with the course of any artery except the superior mesenteric, just below the pancreas. It was evidently of syphilitic origin. There are only 20 cases of aneurism of this artery on record and only one besides the present case was diagnosed during life. The operation showed a sac aneurism of the superior mesenteric opening into the aorta in such a way that the proposed gradual ligature was impracticable and nothing was done. As the patient's general condition is good, Baccelli intends to try to control the aneurism by gradually ligating the branches back of the aneurism.

90. **Galvagni's Xiphoid Crepitation.**—Galvagni noticed in 3 patients with peritonitis a peculiar crepitation at the xiphoid process or along the costal arch, resembling that of a cutaneous emphysema. The sensation is felt as soon as the wall over the xiphoid process is palpated, but it can no longer be distinguished when the upper part of the abdominal cavity becomes filled with ascitic fluid. Campani reports 13 other cases in which this crepitation was observed, all in very sick patients. Interstitial liver affections, cancer of the rectum, ovary, liver or other organ or tuberculous processes in the peritoneum were found in the cases described. Galvagni regards the crepitation as a sign of peritoneal inflammation with consequent obstruction of the normal gaseous interchanges or gas formation from decomposition or gas exhalation substituting the altered cutaneous transpiration.

92. **Leucocyte Formula in Mushroom Poisoning.**—The treatment in the 4 cases described was with injections of atropin with an ice-bag to the region of the stomach to control the tendency to vomit, morphin and seltzer water and no food except milk. All but one patient recovered. The latter presented extreme mononucleosis and the increase in the numbers of the large mononuclears was marked in every instance. The mushrooms belonged to the family of *Agaricus virosus*. The excessive mononucleosis in the fatal case demonstrates anew the evil significance of this phenomenon in infections.

94. **Galvagni's Mouth Souffle.**—In 1896 Galvagni described what he called the divided systolic expiration or oral souffle. Auscultation of the open mouth of the subject shows an interruption of the sound of expiration with a cardiac rhythm. This interruption in the expiration was observed in subjects with pleuritic lesions, the pleural adhesions transmitting the movements of the heart to the air issuing from the lungs. Fischer has called attention to a similar finding, which he accepted as possibly an aid in diagnosing dilatation of the heart not appreciable by any other means. Galvagni accepts it as due to the expulsion of the air from the alveoles in the lungs by the rhythmic compression exerted by the heart and large vessels. He noticed the rhythmic gushes of air through the nostrils during expiration, as well as in the mouth, in one instance.

97. **Action of X-Rays on the Leucocyte-Forming Organs.**—Bozzolo has been systematically treating a number of patients with various affections by exposure to the *x*-rays. The list included one case of severe leukemia, one of lymphatic leukemia, 2 with Banti's disease and one of chlorosis. The condition of the blood notably improved under the Roentgen treatment. One patient was a young woman whose leukemia first manifested itself a year before with general weakness, dyspepsia, amenorrhea and palpitation of the heart. In a few months there was high fever, the spleen had enlarged enormously and there was a hemorrhagic effusion in the left pleural cavity. The reds numbered 2,800,000 and the leucocytes 140,000, the neutrophile polynuclears in a proportion of 51 per cent., the eosinophiles 8.8 per cent., the myelocytes 14.7, and the lymphocytes 22.5 per cent. Under tuberculin treatment the leucocytes were somewhat reduced in number, but the general condition grew worse. Roentgen treatment was commenced with exposure of the spleen, knees, elbows and sternum. In a week the temperature had declined nearly to normal and in ten more days became permanently normal. The spleen also subsided nearly to normal outlines, the appetite and strength returned, the weight increased by nearly 40 pounds, menstruation became normal and the general aspect of the patient is that of health. In three months the leucocytes numbered 10,000, but then they increased again in numbers, at present being 40,000, with no myelocytes or eosinophiles and fewer lymphocytes but more polynuclears. Although the patient is so much improved, her blood still has a suggestive leukemic character which renders a relapse by no means improbable. The improvement observed in this case was paralleled by a number of other cases, showing that it was not a mere coincidence.

99. **Grocco's Triangle in Pleural Effusions.**—Ferrannini describes the mechanism of this sign, which he regards as of extreme importance for the diagnosis of a one-sided pleural effusion. Its size is a reliable indication of the extent of the effusion, and as it vanishes it shows that the effusion is being absorbed, even when no other indications of the absorption are apparent. Grocco's description, published in 1902, stated that in case of a pleural effusion on one side, the other side presented a triangular area of dullness over the back of the opposite side of the thorax. The inner line of this triangle runs along the spine, the lower line coincides with the lower margin of the thoracic resonance for 3 to 7 cm. and the outer line of the triangle follows an oblique line, uniting at an acute angle with the first line, on a level with the top of the effusion. The dullness is always more pronounced when the effusion is on the right side. Radioscopic examination always showed the exact level between the top of the area of dullness and the top of the effusion, and that the length of the base of the triangle was always proportional to the extent of the effusion. The dullness is evidently the result of the displacement and compression of the contents of the sound side of the thorax, and is thus always proportional to the extent of the effusion.

100. **Treatment of Ankylostomiasis.**—Norsa remarks that the cure of this condition is liable to be far from an easy matter. Some patients are cured readily and others require many repeated courses of treatment, with frequent examinations in the interim to finally expel the parasite. Male fern and thymol should be given the preference in treatment, but if one or the other fails, still other remedies should be tried.

102. **Treatment of Acute Coryza in Infants.**—Massei disapproves of very vigorous measures, thinking that the best treatment is by hygiene, a few air douches, glycerolate, and insufflation of orthoform to meet the indications. When the acute symptoms are past he insufflates a powder consisting of 5 parts each of boric acid and bismuth with 1 part resorcin, with or without .1 part menthol.

103. **Inoculability of Malignant Tumors.**—The conclusions of Sanfelice's previously published research on the pathogenic action of blastomycetes are corroborated by this latest work. He found a pedunculated sarcoma in the vagina of a bitch which contained numerous saccharomycetes which cultivated readily. Inoculation of 6 dogs with these micro-organisms and of a number of other animals resulted in lesions in which the saccharomycetes were found in great numbers, the neoformations consisting more of these parasites than of proliferating cells and consequently not true morbid growths in any of the animals except the dogs. In the latter, however, the parasites were scanty and the lesions were true neoplasms, the proliferating cellular elements being mainly of mesodermal origin. The neoplasm amounted to an actual tumor in one out of the 6 dogs, identical in structure with the primary tumor. Inoculation of other cancerous growths in addition to these experiences has convinced him that the inoculation of malignant tumors is possible only when they contain parasites in a cultivatable form. This varies in different growths and at different times in the same growth. When the blastomycetes have become transformed under the influence of the antibodies of the serum into fuchsinophile bodies they are no longer cultivatable.

104. **Sensory and Psychic Functions in Hemiplegia.**—Marimo's clinical experience has confirmed the fact that the paralysis is always accompanied by sensory and psychic disturbances to a greater or less degree. The changes are in the nature of involution, and they should be combated by early and progressive re-education of the sensory and psychic functions as well as of the motor.

105. **Attempt to Realize the Determination of the Sexes by Cytolysis.**—This attempt to realize the determination of the sexes by means of cytolytic injections has already been mentioned in THE JOURNAL, in the news columns, page 478. The present work issues from Valenti's laboratory of histology and embryology at Bologna. An iso-spermatolysin was produced in rabbits by inoculating them with an emulsion of the male genital organs from other rabbits. This iso-spermatolytic serum was then injected into 2 rabbits, each receiving in the course of two and a half months about a dozen injections, corresponding to about a dozen sets of the male organs. The serum acquired toward the last undoubted spermatolytic power, but not very intense, arresting somewhat slowly the movements of spermatozoa. The results were a little more pronounced when the rabbits were inoculated with the male genital organs from sheep. The litters of rabbits born were about equally divided between the sexes, no influence from the cytolytic treatment being perceptible. Possibly the injections induced the formation of an antibody which nullified their action. Zanotti presents several theories to explain the lack of action from the spermatolysin on the germinal cells of the male embryo.

106. **Experimental Tuberculous Infection by Way of the Vagina.**—Galbo's experiments were made at von Schrön's Anatomic Institute. They demonstrate that lesions and solutions of continuity in the female genital tract are indispensable to the development of primary tuberculosis of these parts. Inoculation of tubercle bacilli was always completely harmless so long as the mucosa was intact.

107. **Differentiation of Hemorrhagic Pleural Effusions.**—In a hemorrhagic pleuritis due to some morbid growth the pains are sharp, lancinating, progressive, radiating to the shoulder, neck and arm, with intense dyspnea, no fever, but rapid loss of strength. There is also cyanosis of the arm on the affected side, and swelling of the glands. The thorax gives on percussion a dull, woody sound, Traube's crescent is retained and Skoda's resonance and the bronchial souffle persist even after thoracentesis. The fluid is constantly reproduced and retains to the end its hemorrhagic character. On the other hand, the symptoms of a tuberculous hemorrhagic pleuritis are slight pain or, if sharp, there is no radiation; dyspnea is slight or absent; the fever is of a hectic type; the strength declines more gradually; the cough is short and dry; there is merely slight cyanosis, and no glandular enlargement. There is dullness on percussion and Traube's crescent is not to be discovered. Skoda's sign and the bronchial souffle vanish after thoracentesis. The fluid is very slowly reproduced and may become fibrinous or may be completely absorbed. The work issues from Cardarelli's clinic and is published in book form.